MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

HEALTH SCIENCES LIBRARY
OF THE
UNIVERSITY OF NORTH CAROLINA

History Room

Wingate M. Johnson, M.D.

DIVISION OF HEALTH SCIENCES LIBRARY

TRANSACTIONS

of the

MEDICAL SOCIETY

of the

STATE OF NORTH CAROLINA

EIGHTY-FIFTH ANNUAL SESSION

Held at

PINEHURST, NORTH CAROLINA

MAY 2, 3, 4, 1938

PRESIDENT
WINGATE M. JOHNSON, M.D., WINSTON-SALEM

SECRETARY-TREASURER
T. W. M. LONG, M.D., ROANOKE RAPIDS

Raleigh
EDWARDS & BROUGHTON COMPANY
1938

COMMITTEE ON PUBLICATIONS

T. W. M LONG, M.D., *Secretary-Treasurer, Chairman ex-officio*..Roanoke Rapids

E. C. JUDD, M.D.....Raleigh

B. C. WILLIS, M.D.....Rocky Mount

"It is understood that the Society is not to be considered as endorsing all the views and opinions of authors of papers published in the TRANSACTIONS of the Society."

—*Extract from By-Laws, Chapter 10, Section 8.*

EARLY HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM ORGANIZATION TO 1804

Date	Place	President	Vice Presidents	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1938
*Missing Data Not to be Found in Record

	Date	Place of Meeting	Number in Attendance	President	Vice Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill		W. H. McKee		25		
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Williamson, W. G. Thomas	W. H. McKee	W. G. Hill	38	9	
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	0	
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman	E. B. Haywood	J. J. W. Tucker	72	12	
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman	W. W. Harris	Daniel Dupree	80	14	
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean	S. S. Satchwell	Daniel Dupree	84	17	
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly	S. S. Satchwell	J. B. Dunn	96	18	
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson	S. S. Satchwell	J. B. Dunn	101	22	
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson	W. G. Thomas	J. B. Dunn	113	16	
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce	W. G. Thomas	J. B. Dunn	172	18	
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard	W. G. Thomas	C. W. Graham			
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach	W. G. Thomas	C. W. Graham	233	18	
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom	W. G. Thomas	C. W. Graham	244	18	
13	1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones	W. G. Thomas	C. W. Graham			
14	1867	Tarboro	41	W. G. Thomas		S. S. Satchwell	C. W. Graham	288	11	
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker	Thomas F. Wood	J. W. Jones			
16	1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke	Thomas F. Wood	J. W. Jones			
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne	Thomas F. Wood	J. W. Jones			
18	1871	Raleigh	35	Hugh Kelley	D. N. Patterson, R. C. Pearson, J. B. Seavy, G. L. Kirby	Thomas F. Wood	J. W. Jones			
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom	James McKee	J. W. Jones			
20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, P. T. Jerman	James McKee	H. T. Bahnson			

21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight	James McKee	H. T. Bahnson	------	------	------
22	1875	Wilson	60	J. W. Jones	Walker Debnam, J. A. Gibson, William Little, D. N. Patterson	James McKee	H. T. Bahnson	148	5	------
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall	James McKee	H. T. Bahnson	157	4	------
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill	James McKee	A. G. Carr	177	4	------
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith	L. J. Picot	A. G. Carr	194	6	------
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill	L. J. Picot	A. G. Carr	198	6	------
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis	L. J. Picot	A. G. Carr	225	6	------
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy	L. J. Picot	A. G. Carr	254	6	------
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald	L. J. Picot	A. G. Carr	297	7	------
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead	L. J. Picot	A. G. Carr	310	7	------
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long	L. J. Picot	A. G. Carr	348	7	------
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr	W. C. Murphy	R. L. Payne, Jr.	424	6	------
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison	J. M. Baker	R. L. Payne, Jr.	438	7	------
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson	J. M. Baker	R. L. Payne, Jr.	452	7	------
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson	J. M. Baker	C. M. Van Poole	306	6	------
36	1889	Elizabeth City	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long	J. M. Baker	C. M. Van Poole	410	6	------
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth	J. M. Hays	C. M. Van Poole	414	6	------
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly	J. M. Hays	C. M. Van Poole	422	6	------
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard	J. M. Hays	C. M. Van Poole	431	6	------
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill	R. D. Jewett	M. P. Perry	447	5	3
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodges, R. W. Tate, Willis Alston, M. H. Fletcher	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	------	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	*---	Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Lodson, W. C. Brownson	Geo. W. Presley	G. T. Sikes	489	6	16

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1938—*Continued*
*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
47 1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard	Geo. W. Presley	G. T. Sikes	482	6	21
48 1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell	Geo. W. Presley	G. T. Sikes	515	5	18
49 1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott	Geo. W. Presley	G. T. Sikes	546	5	20
50 1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson	J. Howell Way	G. T. Sikes	530	6	19
51 1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl	J. Howell Way	G. T. Sikes	1,033	8	17
52 1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison	J. Howell Way	G. T. Sikes	1,175	8	17
53 1906	Charlotte	406	E. C. Register	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer	J. Howell Way	G. T. Sikes	1,234	8	16
54 1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLaughlin, W. F. Hargrove	David A. Stanton	H. McK. Tucker	888	7	16
55 1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon	David A. Stanton	H. McK. Tucker	998	7	28
56 1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees	David A. Stanton	H. McK. Tucker	1,067	7	25
57 1910	Wrightsville Beach	276	J. A. Burroughs E. J. Wood	E. J. Wood, John Q. Myers, L. D. Wharton	David A. Stanton	H. D. Walker	1,080	8	35
58 1911	Charlotte	412	C. M. Van Poole	J. V. McGougan, W. E. Warren, L. N. Glenn	David A. Stanton	H. D. Walker	880	8	45
59 1912	Hendersonville	296	A. A. Kent	J. P. Munroe, W. P. Horton, J. G. Murphy	David A. Stanton	H. D. Walker	950	8	44
60 1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bullock, L. B. Morse	John A. Ferrell	H. D. Walker	1,133	8	40
61 1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier	John A. Ferrell	H. D. Walker	1,228	8	47
62 1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell	John A. Ferrell	H. D. Walker	1,221	9	68
63 1916	Durham	406	M. H. Fletcher	J. L. Nicholson, L. N. Glenn, W. H. Hardison	Benj. K. Hays	W. M. Jones	1,228	10	79
64 1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill, J. H. Shuford	Benj. K. Hays	W. M. Jones	1,271	11	81
65 1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal	Benj. K. Hays	W. M. Jones	1,087	11	81

							Sec.-Treas.	Acting Sec.-Treas.			
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair		Benj. K. Hays	L. B. McBrayer	1,306	11	100
67	1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thomas I. Fox		Benj. K. Hays	L. B. McBrayer	1,497	12	100
68	1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning		Benj. K. Hays	L. B. McBrayer	1,491	12	93
								Sec.-Treas.			
69	1922	Winston-Salem	507	H. A. Royster	W. T. Parrott, B. C. Nalle, J. R. McCracken			L. B. McBrayer	1,571	12	100
70	1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long			L. B. McBrayer	1,592	9	101
71	1924	Raleigh	525	J. V. McGougan	J. L. Spruill,* Eugene B. Glenn, D. A. Garrison			L. B. McBrayer	1,604	9	106
72	1925	Pinehurst	550	Albert Anderson	W. L. Dunn, A. E. Bell, K. G. Averitt			L. B. McBrayer	1,657	10	116
73	1926	Wrightsville Beach	445	Wm. deB. MacNider	J. P. Matheson, W. W. Dawson, H. H. Bass			L. B. McBrayer	1,663	10	107
74	1927	Durham	653	John Q. Myers	J. W. Carroll, A. Y. Linville, C. H. Cocke			L. B. McBrayer	1,691	10	121
75	1928	Pinehurst	611	John T. Burrus	G. H. Macon, R. F. Leinbach, W. R. Griffin			L. B. McBrayer	1,738	11	143
76	1929	Greensboro	671	Thurman D. Kitchin	Dr. W. L. Dunn,* Asheville, Dr. D. T. Tayloe, Jr., Washington, Dr. W. D. James, Hamlet			L. B. McBrayer	1,666	11	146
77	1930	Pinehurst	701	L. A. Crowell	W. B. Murphy, Wm. E. Warren, N. B. Adams			L. B. McBrayer	1,711	11	155
					President-Elect	Vice Presidents					
78	1931	Durham	714	J. G. Murphy	M. L. Stevens	C. A. Julian, Greensboro J. W. Davis, Statesville		L. B. McBrayer	1,600	10	164
79	1932	Winston-Salem	740	M. L. Stevens	Jno. B. Wright	C. W. Banner, Greensboro W. W. Sawyer, Elizabeth City		L. B. McBrayer	1,559	10	166
80	1933	Raleigh	714	Jno. B. Wright	I. H. Manning	J. R. McCracken, Waynesville		L. B. McBrayer	1,363	10	181
81	1934	Pinehurst	728	I. H. Manning	P. P. McCain	W. G. Suiter, Weldon R. L. Felts, Durham		L. B. McBrayer	1,563	10	210
82	1935	Pinehurst	706	P. P. McCain	Paul H. Ringer	H. D. Walker, Elizabeth City J. F. McKay, Buie's Creek		L. B. McBrayer	1,619	10	215
83	1936	Asheville	583	Paul H. Ringer	C. F. Strosnider	William Allen, Charlotte J. K. Pepper, Winston-Salem E. S. Bulluck, Wilmington		L. B. McBrayer	1,462	10	235
84	1937	Winston-Salem	767	C. F. Strosnider	Wingate M. Johnson	C. A. Woodward, Wilson Jno. F. Brownsberger, Fletcher		L. B. McBrayer T. W. M. Long	1,503	7	253
85	1938	Pinehurst	802	Wingate M. Johnson	J. Buren Sidbury	R. B. McKnight, Charlotte J. F. Abel, Waynesville					

† Died during his term of office; succeeded by E. J. Wood, first vice president.
* Died during term of office.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

James H. Dickson, Wilmington 1859-1866
Charles E. Johnson, Raleigh 1859-1866
Caleb Winslow, Hertford 1859-1866
Otis F. Manson, Townsville 1859-1866
William H. McKee, Raleigh 1859-1866
Christopher Happoldt, Morganton 1859-1866
J. Graham Tull, New Bern 1859-1866
Samuel T. Iredell, Secretary 1859-1866

SECOND BOARD

N. J. Pittman, Tarboro 1866-1872
E. Burke Haywood, Raleigh 1866-1872
R. H. Winborne, Edenton 1866-1872
S. S. Satchwell, Rocky Point 1866-1872
J. J. Summerell, Salisbury 1866-1872
R. B. Haywood, Raleigh 1866-1872
M. Whitehead, Salisbury 1866-1872
J. F. Shaffner, Salem 1866-1872
William Little, Secretary 1866-1867
Thomas F. Wood, Secretary, Wilmington 1867-1872

THIRD BOARD

Charles J. O'Hagan, Greenville 1872-1878
W. A. B. Norcom, Edenton 1872-1878
C. Tate Murphy, Clinton 1872-1878
George A. Foote, Warrenton 1872-1878
J. W. Jones, Tarboro 1872-1878
R. L. Payne, Lexington 1872-1878
Charles Duffy, Jr., Secretary, New Bern 1872-1878

FOURTH BOARD

Peter E. Hines, Raleigh 1878-1884
Thomas D. Haigh, Fayetteville 1878-1884
George L. Kirby, Goldsboro 1878-1884
Thomas F. Wood, Wilmington 1878-1884
Joseph Graham, Charlotte 1878-1884
Robert I. Hicks, Williamston[1] 1878-1880
Richard H. Lewis, Raleigh[2] 1880-1884
Henry T. Bahnson, Secretary, Salem 1878-1884

FIFTH BOARD

William R. Wood, Scotland Neck 1884-1890
Augustus W. Knox, Raleigh 1884-1890
Francis Duffy, New Bern 1884-1890
Patrick L. Murphy, Morganton 1884-1890
Willis Alston, Littleton 1884-1890
J. A. Reagan, Weaverville 1884-1890
W. J. H. Bellamy, Secretary, Wilmington 1884-1890

SIXTH AND SEVENTH BOARDS

R. L. Payne, Jr., Lexington 1890-1892
George W. Purefoy, Asheville 1890-1892
George G. Thomas, Wilmington 1890-1894
Robert S. Young, Concord 1890-1894
William H. Whitehead, Rocky Mount 1890-1896
George W. Long, Graham 1890-1896
L. J. Picot, Secretary, Littleton 1890-1896
Julian M. Baker, Tarboro 1892-1898
H. B. Weaver, Secretary, Asheville 1892-1898
J. M. Hays, Greensboro[3] 1894-1897
Kemp P. Battle, Jr., Raleigh[4] 1897-1900
Thomas S. Burbank, Wilmington[1] 1894-1898
Richard H. Whitehead, Chapel Hill[5] 1896-1898
William H. H. Cobb, Goldsboro[5] 1898-1900
J. Howell Way, Secretary, Waynesville[6] 1898-1902
David T. Tayloe, Washington 1896-1902
Thomas E. Anderson, Secretary, Statesville 1896-1902
Albert Anderson, Wilson[7] 1898-1902
Edward C. Register, Charlotte[7] 1898-1902

---

[1] Resigned before expiration of term.
[2] Elected for unexpired term of Dr. Hicks.
[3] Died before the expiration of his term.
[4] Elected to serve unexpired term of Dr. Hays.
[5] Elected to serve the unexpired term of Dr. Burbank.
[6] Elected to serve the unexpired term of Dr. Whitehead.
[7] Elected for short term expiring in 1902.

Thomas S. McMullan, Hertford[2]	1900-1902
John C. Walton[2]	1900-1902

EIGHTH BOARD

A. A. Kent, Lenoir	1902-1908
Charles O'H. Laughinghouse, Greenville	1902-1908
M. H. Fletcher, Asheville	1902-1908
James M. Parrott, Kinston	1902-1908
J. T. J. Battle, Greensboro	1902-1908
Frank H. Russell, Wilmington	1902-1906
George W. Pressly, Secretary, Charlotte[1]	1906-1908
G. T. Sikes, Secretary, Grissom[3]	

NINTH BOARD

Lewis B. McBrayer, Asheville	1908-1914
John C. Rodman, Washington	1908-1914
William W. McKenzie, Salisbury	1908-1914
Henry H. Dodson, Greensboro	1908-1914
John Bynum, Winston-Salem	1908-1914
J. L. Nicholson, Richlands	1908-1914
Benj. K. Hays, Secretary, Oxford	

TENTH BOARD

Isaac M. Taylor, Morganton	1914-1920
John Q. Myers, Charlotte	1914-1920
Jacob F. Highsmith, Fayetteville	1914-1920
Martin L. Stevens, Asheville	1914-1920
Charles T. Harper, Wilmington[4]	1914-1915
Edwin G. Moore, Elm City[5]	1915-1920
John G. Blount, Washington[6]	1914-1920
Hubert A. Royster, Secretary, Raleigh	1914-1920

ELEVENTH BOARD

Lester A. Crowell, Lincolnton	1920-1926
William P. Holt, Duke	1920-1926
J. Gerald Murphy, Wilmington	1920-1926
Lucius N. Glenn, Gastonia	1920-1926
Clarence A. Shore, Raleigh	1920-1926
William M. Jones, Greensboro	1920-1926
Kemp P. B. Bonner, Secretary, Morehead City	1920-1926

TWELFTH BOARD

Paul H. Ringer, Asheville	1926-1932
W. Houston Moore, Wilmington	1926-1932
T. W. M. Long, Roanoke Rapids	1926-1932
W. W. Dawson, Grifton[4]	1926-1932
J. K. Pepper, Winston-Salem	1926-1932
Foy Roberson, Durham	1926-1932
John W. McConnell, Secretary, Davidson	1930-1932
David T. Tayloe, Jr., Washington[7]	

THIRTEENTH BOARD

Ben F. Royal, Morehead City	1932-1938
Benj. J. Lawrence, Secretary, Raleigh	1932-1938
F. Webb Griffith, Asheville	1932-1938
Hamilton W. McKay, Charlotte	1932-1938
J. W. Vernon, Morganton	1932-1938
W. H. Smith, Goldsboro	1932-1938
K. G. Averitt, Cedar Creek[6]	1932-1936
Roscoe D. McMillan, Red Springs[8]	1936-1938

FOURTEENTH BOARD

Karl B. Pace, Greenville	1938-1944
William M. Coppridge, Durham	1938-1944
Frank A. Sharpe, Greensboro	1938-1944
Lewis W. Elias, Asheville	1938-1944
J. Street Brewer, Roseboro	1938-1944
W. D. James, Hamlet	1938-1944
L. A. Crowell, Jr., Lincolnton	1938-1944

[1] Resigned before the expiration of his term.
[2] Elected for short term expiring in 1902.
[3] Elected to serve the unexpired term of Dr. Pressly.
[4] Died before the expiration of his term.
[5] Elected to serve the unexpired term of Dr. Harper.
[6] Died a few months before the expiration of his term; such a short time that the vacancy was not filled.
[7] Elected to serve unexpired term of Dr. W. W. Dawson.
[8] Elected to serve unexpired term of Dr. Averitt.

NOTE: In 1890 the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the membership was overlapping.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH
FROM ORGANIZATION IN 1877 TO 1938

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas. F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1886
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1888
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1892
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1893
J. M. Baker. M.D.	Tarboro	State Society	1891 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1892
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1897
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1892 to 1897
George G. Thomas, M.D., President	Wilmington	State Board of Health	1891 to 1895
S. Westray Battle, M.D.	Asheville	State Society	1892 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1893 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1894 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F.P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1897 to 1899
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M. D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905

* Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

MEMBERS STATE BOARD OF HEALTH—*Continued*

Name	Address	Appointed by	Term
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1909
James A. Burroughs, M.D.[1]	Asheville	State Society	1907 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1913
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.[2]	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.[1]	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Fletcher R. Harris, M.D.[3]	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1919 to 1923
Chas. E. Waddell, C. E.[4]	Asheville	Gov. C. Morrison	1921 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1923 to 1925
J. Howell Way, M.D., President	Waynesville	Gov. C. Morrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov. C. Morrison	1923 to 1929
James P. Stowe, Ph.G.	Charlotte	Gov. C. Morrison	1923 to 1927
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1925
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1929
Charles O'H. Laughinghouse, M.D.[5]	Greenville	State Society	1923 to 1926
Cyrus Thompson, M.D.[1]	Jacksonville	State Society	1925 to 1931
D. A. Stanton, M. D.	High Point	State Society	1925 to 1931
R. H. Lewis, M.D.[1]	Raleigh	Gov. A. W. McLean	1925 to 1931
Jno. B. Wright, M.D.[6]	Raleigh	Gov. A. W. McLean	1926 to 1931
E. J. Tucker, D.D.S.[6]	Roxboro	Gov. A. W. McLean	1925 to 1931
W. S. Rankin, M.D.[4]	Charlotte	State Board of Health	1926 to 1927
L. E. McDaniel, M.D.	Jackson	State Board of Health	1927 to 1929
Chas. C. Orr, M.D.	Asheville	Gov. A. W. McLean	1927 to 1929
Thomas E. Anderson, M.D.[6]	Statesville	State Society	1929 to 1935
L. E. McDaniel, M.D.[6]	Jackson	State Society	1929 to 1935
James P. Stowe, Ph.G.[6]	Charlotte	Gov. A. W. McLean	1927 to 1933
A. J. Crowell, M.D.[6]	Charlotte	Gov. O. Max Gardner	1929 to 1935
J. M. Parrott, M.D.[6]	Kinston	State Board of Health	1930 to 1931
Chas. C. Orr, M.D.[6]	Asheville	Gov. O. Max Gardner	1929 to 1935
J. M. Parrott, M.D.[6]	Kinston	State Society	1931 to 1935
C. V. Reynolds, M.D.	Asheville	State Society	1931 to 1935
L. B. Evans, M.D.	Windsor	State Society	1931 to 1933
S. D. Craig, M.D.	Winston-Salem	State Society	1931 to 1933
John T. Burrus, M.D.	High Point	Gov. O. Max Gardner	1931 to 1933
J. N. Johnson, D.D.S.	Goldsboro	Gov. O. Max Gardner	1931 to 1933
J. A. Goode, Ph.G.	Asheville	Gov. O. Max Gardner	1931 to 1933
H. L. Large, M.D.	Rocky Mount	Gov. O. Max Gardner	1931 to 1935
H. G. Baity, C.E.	Chapel Hill	Gov. O. Max Gardner	1931 to 1935
Grady G. Dixon, M.D.[7]	Ayden	Ex. Com. State Society	1931 to 1932
Grady G. Dixon, M.D.[7]	Ayden	State Society	1932 to 1935
S. D. Craig	Winston-Salem	State Society	1933 to 1937
W. T. Rainey, M.D.	Fayetteville	State Society	1933 to 1937
J. N. Johnson, D.D.S.	Goldsboro	Gov. J.C.B. Ehringhaus	1933 to 1937
Hubert B. Haywood, M.D.	Raleigh	Gov. J.C.B. Ehringhaus	1933 to 1937
James P. Stowe, Ph.G.	Charlotte	Gov. J.C.B. Ehringhaus	1933 to 1937
Grady G. Dixon, M.D.	Ayden	State Society	1935 to 1939
J. LaBruce Ward, M.D.	Asheville	State Society	1935 to 1939
H. Lee Large, M.D.	Rocky Mount	Gov. J.C.B. Ehringhaus	1935 to 1939
H. G. Baity, C.E.	Chapel Hill	Gov. J.C.B. Ehringhaus	1935 to 1939
S. D. Craig, M.D.	Winston-Salem	State Society	1937 to 1941
W. T. Rainey, M.D.	Fayetteville	State Society	1937 to 1941

[1] Died leaving unexpired term. [2] Resigned to become member of General Assembly.
[3] Resigned to become Health Officer Vance County. [4] Resigned.
[5] Resigned to become Secretary of State Board of Health.
[6] Term terminated account reorganization State Board of Health by General Assembly.
[7] To fill vacancy caused by resignation of Dr. J. M. Parrott.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1924-1938

County	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Alamance-Caswell *a*	27	25	27	30	30	32	33	33	32	29	32	30	31	30	27
Alexander *b*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Alleghany *n*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Anson	12	11	10	6	8	8	6	6	4	4	9	7	8	7	6
Ashe *p*	6	10	6	8	6	5	5	5	4	-----	-----	7	-----	-----	-----
Avery *r*	5	5	5	6	6	6	5	5	5	-----	5	5	5	5	6
Beaufort	14	17	17	17	17	16	18	15	15	12	13	15	10	9	11
Bertie	9	9	8	8	8	6	7	9	7	8	9	11	9	8	8
Bladen	3	8	7	8	8	8	8	8	8	5	6	6	6	-----	7
Brunswick	1	1	1	1	4	6	2	2	2	2	2	3	2	-----	-----
Buncombe	105	97	102	118	120	118	113	112	105	83	107	115	106	98	103
Burke	13	14	11	11	12	12	17	17	17	17	12	10	13	18	17
Cabarrus	19	21	21	22	27	27	23	20	20	10	14	21	8	11	11
Caldwell	10	11	14	15	15	13	15	14	12	9	12	12	12	13	15
Camden *c*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Carteret	10	10	12	12	11	11	12	12	12	12	12	11	12	10	2
Caswell *d*	1	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	11	-----	-----	-----
Catawba	19	16	16	21	16	17	13	13	16	8	16	16	16	14	19
Chatham	9	9	7	9	8	9	9	4	3	2	3	2	0	1	3
Cherokee	9	10	9	8	10	10	10	9	8	5	8	8	8	7	12
Chowan-Perquimans	8	5	9	10	9	7	8	6	7	6	7	5	4	2	5
Clay *e*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cleveland	18	17	19	20	20	22	23	19	22	21	20	21	22	21	25
Columbus	11	12	14	15	14	14	15	10	8	8	10	11	10	7	9
Craven	12	14	16	17	15	14	13	13	14	9	5	10	6	6	8
Cumberland	32	31	28	29	28	22	26	23	21	27	27	27	21	24	24
Currituck *s*	4	4	4	3	2	1	1	1	1	-----	-----	-----	-----	-----	-----
Dare *f*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Davidson	22	20	19	19	18	17	16	17	17	17	20	23	19	24	18
Davie	4	5	4	5	5	5	5	5	6	4	2	1	1	1	4
Duplin	12	13	13	13	9	11	9	11	7	2	2	9	2	2	4
Durham-Orange	47	53	60	64	63	65	67	76	77	76	76	85	87	81	104
Edgecombe-Nash	10	11	12	12	12	7	10	43	39	25	46	49	32	35	31
Forsyth	62	63	64	66	74	59	70	66	69	70	73	77	77	73	83
Franklin	12	12	12	10	12	11	10	9	7	7	9	8	9	9	6
Gaston	40	39	40	38	39	39	36	33	37	12	28	30	21	28	38
Gates	1	1	-----	-----	1	2	2	2	2	2	2	2	2	2	1
Graham	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Granville	13	13	12	12	14	13	13	13	12	10	10	11	10	11	13
Greene	6	5	5	5	5	5	5	5	5	5	6	5	6	6	7
Guilford	93	107	112	119	123	130	124	124	118	91	102	99	83	109	101
Halifax	21	20	16	14	17	17	16	15	14	13	15	18	17	25	23
Harnett	15	13	12	16	16	15	14	13	15	16	14	15	10	16	12
Haywood	13	14	14	13	8	14	14	12	13	15	20	19	21	22	21
Henderson *j*	-----	-----	17	19	16	16	19	14	12	9	17	17	13	14	17
Henderson-Polk *g*	13	14	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hertford	10	8	8	7	7	6	5	5	5	6	7	7	4	5	7
Hoke	9	11	10	11	12	14	14	14	12	11	13	14	13	11	10
Hyde	2	1	1	1	1	1	1	1	1	-----	1	1	-----	-----	-----
Iredell-Alexander	20	26	29	34	37	39	38	38	39	29	38	38	39	30	31
Jackson	8	7	7	6	5	6	6	3	7	2	4	7	4	6	3
Johnston	25	24	28	24	23	18	23	25	20	19	19	21	12	9	27
Jones	1	4	4	3	3	3	3	3	3	3	3	3	3	2	1
Lee	11	13	13	13	14	16	13	11	13	10	10	10	3	8	10
Lenoir	20	18	20	22	23	20	22	17	19	20	22	20	22	21	22
Lincoln	16	11	11	12	13	14	13	10	12	12	13	11	8	10	11
Macon-Clay	7	6	8	8	9	6	8	4	3	2	5	3	5	4	2
Madison	11	11	11	5	12	7	5	3	4	5	4	4	1	-----	1
Martin *t*	10	10	10	10	10	10	8	7	4	-----	-----	-----	-----	-----	-----
Martin-Washington-Tyrrell	-----	-----	-----	-----	-----	-----	-----	-----	-----	10	10	12	10	12	13
McDowell	7	8	7	8	7	9	12	10	10	11	10	13	10	6	10
Mecklenburg	109	121	117	104	119	125	128	124	117	104	108	116	116	125	119
Mitchell	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	3	2	3	3	2
Mitchell-Avery	-----	-----	-----	-----	-----	-----	-----	-----	-----	8	-----	-----	-----	-----	-----
Mitchell-Watauga	7	7	8	7	9	8	6	5	5	-----	-----	-----	-----	-----	-----
Montgomery	9	8	9	9	10	11	9	10	9	7	9	9	8	7	3
Moore	20	19	21	17	20	22	17	21	21	18	22	21	19	22	21
Nash *m*	33	34	32	31	30	30	33	-----	-----	-----	-----	-----	-----	-----	-----
New Hanover	44	42	40	41	38	32	38	37	35	25	35	39	34	36	32
Northampton	10	10	11	9	9	6	3	4	5	4	8	4	4	4	9
Onslow	6	6	5	5	6	5	5	5	6	6	6	5	2	5	4
Orange *h*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Pamlico	4	5	5	5	5	5	4	4	4	4	4	4	4	4	4
Pasquotank-Camden-Currituck-Dare	-----	-----	-----	-----	-----	-----	-----	-----	-----	12	14	12	11	9	8

STATUS OF MEMBERSHIP BY COUNTIES—*Continued*

County	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Pasquotank-Camden-Dare	17	18	19	18	16	14	17	14	11	-----	-----	-----	-----	-----	-----
Pender	2	1	1	1	1	1	1	1	1	1	1	1	-----	1	1
Perquimans *i*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Person	10	8	7	7	7	6	6	6	6	7	7	8	7	7	8
Pitt	24	26	24	26	31	24	27	27	20	14	22	26	24	26	30
Polk *j*	-----	-----	5	6	6	6	6	5	7	7	6	6	4	5	5
Randolph	13	14	12	10	11	10	8	7	14	10	11	13	10	9	11
Richmond	16	19	18	18	18	14	17	17	15	16	15	16	15	17	16
Robeson	29	30	31	28	28	21	24	21	22	23	25	27	28	29	34
Rockingham	23	26	23	24	21	20	24	24	21	22	23	21	18	20	18
Rowan	36	40	40	40	42	35	35	39	33	24	34	30	27	28	26
Rutherford	21	21	22	24	22	22	22	21	21	19	20	21	23	22	23
Sampson	17	15	14	13	13	10	13	13	14	14	14	14	14	16	16
Scotland	12	12	12	12	12	12	10	11	11	11	11	11	10	11	11
Stanly	15	14	13	15	14	14	16	15	13	12	16	17	18	19	18
Stokes	10	10	5	7	8	6	2	6	6	1	1	1	-----	-----	-----
Surry *v*	26	22	17	20	22	20	20	13	17	12	-----	-----	-----	-----	-----
Surry-Yadkin	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	25	22	17	15	14
Swain	1	1	1	-----	-----	-----	-----	-----	-----	-----	3	-----	4	5	3
Transylvania	4	8	4	5	7	4	2	2	1	3	2	2	2	-----	2
Tyrrell *k*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Union	18	19	19	16	16	14	13	10	9	10	10	11	10	8	11
Vance	12	11	12	11	11	11	12	8	7	8	9	9	8	8	6
Wake	73	78	79	78	80	84	94	87	86	87	89	88	89	95	100
Warren	6	6	6	6	6	6	6	6	6	5	5	6	2	2	2
Washington-Tyrrell *u*	9	8	8	6	6	5	3	3	3	-----	-----	-----	-----	-----	-----
Watauga *l q*	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Watauga-Ashe	-----	-----	-----	-----	-----	-----	-----	-----	-----	3	5	6	5	5	6
Wayne	29	32	34	32	38	38	38	30	32	22	27	29	27	29	30
Wilkes *o*	10	10	9	14	11	10	10	11	10	-----	-----	-----	-----	-----	-----
Wilkes-Alleghany	-----	-----	-----	-----	-----	-----	-----	-----	-----	9	13	10	14	13	14
Wilson	31	32	34	34	35	31	28	28	22	21	25	29	31	25	25
Yadkin *v*	2	3	2	2	3	5	10	-----	4	1	-----	-----	-----	-----	-----
Yancey	1	1	2	7	5	3	4	1	1	-----	5	4	1	-----	4
Totals	1,606	1,657	1,666	1,691	1,738	1,669	1,694	1,600	1,559	1,363	1,563	1,619	1,462	1,503	1,585

a The figures for 1926 and after are for Alamance-Caswell; for the other years, for Alamance only; *b* See Iredell-Alexander; *c* See Pasquotank-Camden-Dare; *d* For 1926 and after, see Alamance-Caswell; *e* See Macon-Clay; *f* See Pasquotank-Camden-Dare; *g* See Henderson or Polk for years after 1925; *h* See Durham-Orange; *i* See Chowan-Perquimans; *j* See Henderson-Polk for 1912-1925; *k* See Washington-Tyrrell; *l* See Mitchell-Watauga; *m* See Edgecombe-Nash for 1931; for the other years Edgecombe only; *n* See Wilkes-Alleghany; *o* See Wilkes-Alleghany; *p* See Watauga-Ashe; *q* See Watauga-Ashe; *r* See Mitchell-Avery; *s* See Pasquotank-Camden-Currituck-Dare; *t* See Martin-Washington-Tyrrell; *u* See Martin-Washington-Tyrrell; v See Surry-Yadkin.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Abel, J. F. ..... Waynesville
Abernathy, Claude O. ..... Raleigh
Abernathy, H. N. ..... Charlotte
*Achorn, John W. ..... Pinebluff
*Adams, C. A. ..... Durham
*Adams, Charles E. ..... Gastonia
*Adams, M. R. ..... Statesville
*Alexander, Annie L. ..... Charlotte
Alexander, Jas. R. ..... Charlotte
Allan, William ..... Charlotte
Allen, Jos. A. ..... New London
*Allen, Rufus L. ..... Waynesville
*Alston, B. D. ..... Epsom
*Ambler, C. P. ..... Asheville
Anders, McT. G. ..... Gastonia
*Anderson, Albert ..... Raleigh
Anderson, Chas. A. ..... Burlington
*Anderson, Thos. Eli ..... Statesville
Anderson, Wade H. ..... Wilson
Archer, Isaac J. ..... Black Mountain
*Archery, L. M. ..... Concord
*Asbury, F. E. ..... Asheboro
*Ashecraft, J. E. ..... Fayetteville
Ashworth, Benj. L. ..... Marion
Ashworth, W. C. ..... Greensboro
*Attmore, Geo. S. ..... Stonewall
*Averitt, K. G. ..... Cedar Creek
Aydlett, H. T. ..... Greensboro
Aydlette, Jos. P. ..... Earl
*Bahnson, H. T. ..... Winston-Salem
*Baker, J. M. ..... Tarboro
Banner, Chas. W. ..... Greensboro
*Barrier, P. A. ..... Mt. Pleasant
Basnight, Thos. G. ..... Stokes
*Bass, H. H. ..... Henderson
Battle, J. T. J. ..... Greensboro
*Battle, Kemp P. ..... Raleigh
*Battle, S. W. ..... Asheville
Beall, L. G. ..... Black Mountain
*Beall, Wm. P. ..... Greensboro
Bell, A. E. ..... Mooresville
Bellamy, Robert H. ..... Wilmington
*Bellamy, W. J. H. ..... Wilmington
Bennett, Jos. H. ..... Wadesboro
Best, Henry B. ..... Wilson
Biggs, Montgom'y H. ... Rutherfordton
*Blair, A. McNiel ..... Southern Pines
Blair, M. P. ..... Marshville
*Boddie, N. P. ..... Durham
*Bolton, Mahlon ..... Rich Square
Bonner, K. P. B. ..... Morehead City
Boone, W. H. ..... Durham
*Booth, Samuel D. ..... Oxford
Bostic, Wm. C. ..... Forest City
Bowling, E. H. ..... Durham
*Bowman, H. P. ..... Greensboro
Brookshire, Harley G. ..... Asheville
*Brown, G. A. ..... Mt. Ulla
Brown, G. W. ..... Raeford
Brown, J. P. ..... Fairmont
Brown, J. S., Sr. ..... Hendersonville
*Brownson, W. C. ..... Asheville
Buffaloe, J. S. ..... Garner
*Bullock, D. W. ..... Wilmington
Bullock, Thomas C. ..... Autryville
*Burrus, John T. ..... High Point
Burt, B. W. ..... Holly Springs
Burt, S. P. ..... Louisburg
Byerly, Andrew B. ..... Cooleemee
*Bynum, John ..... Winston-Salem
*Caldwell, D. G. ..... Concord
Carlton, R. L. ..... Winston-Salem
*Carroll, E. D. Dixon ..... Raleigh
Caviness, Zebulon M. ..... Raleigh
*Cheatham, Archibald ..... Durham
*Cheesborough, Thos. P. ..... Asheville
*Clark, G. L. ..... Clarkton
Clement, E. B. ..... Salisbury
Cobb, Wm. H., Jr. ..... Goldsboro
Cocke, Jere E. ..... Asheville
Coleman, G. S. ..... Raleigh
Cooper, Geo. M. ..... Raleigh
Corpening, O. J. ..... Granite Falls
*Cotton, Clyde E. ..... Asheville
*Council, J. B. ..... Salisbury
*Covington, J. M. ..... Wadesboro
*Cox, E. L. ..... Jacksonville
Cranmer, J. B. ..... Wilmington
*Croom, J. D. ..... Maxton
Crowell, A. J. ..... Charlotte
Crowell, L. A. ..... Lincolnton
Crumpler, Paul ..... Clinton

* Deceased.

Currie, D. S. ..... Parkton
Daligny, Charles ..... Troy
*Dalton, David N. ..... Winston-Salem
Dalton, Wm. N. ..... Winston-Salem
Daniel, N. C. ..... Oxford
Daniels, O. C. ..... Oriental
Davidson, John E. S. ..... Charlotte
Davis, Thomas W. ..... Winston-Salem
Dearmon, J. McC. ..... Charlotte
Dees, Rigdon O. ..... Greensboro
*Denny, Wm. W. ..... Pink Hill
Dick, Julius Vance ..... Gibsonville
Dickinson, E. T. ..... Wilson
*Dillard, Richard, Jr. ..... Edenton
Dixon, Guy E. ..... Hendersonville
*Dixon, Wm. H. ..... Ayden
*Dodson, H. H. ..... Greensboro
*Duffy, Charles ..... New Bern
Eckel, O. F. ..... Asheville
*Eddleman, H. M. ..... Gastonia
*Edgerton, Jas. L. ..... Hendersonville
*Edwards, G. C. ..... Hookerton
Edwards, J. D. ..... Siler City
Elias, Lewis A. ..... Asheville
Eller, A. J. ..... Wilkesboro
*Ellis, R. C. ..... Shelby
*Evans, L. B. ..... Windsor
Everett, A. C. ..... Rockingham
*Faison, I. W. ..... Charlotte
*Faison, Wm. W. ..... Goldsboro
*Farthing, L. E. ..... Wilmington
Fearing, Isaiah ..... Elizabeth City
Felts, Robert L. ..... Durham
Flagge, Phillip W. ..... High Point
*Fletcher, M. H. ..... Asheville
Flippin, J. M. ..... Pilot Mountain
Flippin, Samuel T. ..... Siloam
Fortune, Alex F. ..... Greensboro
*Fox, M. F. ..... Guilford College
*Freeman, Richard A. ..... Burlington
Frizzelle, M. T. ..... Ayden
*Galloway, W. C. ..... Wilmington
Garren, R. H. ..... Monroe
*Garrison, David A. ..... Gastonia
Gibbon, Robert L. ..... Charlotte
*Gibbs, N. M. ..... New Bern
Gibson, John S. ..... Gibson
Gibson, M. R. ..... Raleigh
*Gilmer, Chas. S. ..... Greensboro, R. 6
Gilreath, Frank H. ..... N. Wilkesboro
Glascock, Joy H. ..... Greensboro
Glenn, Lucius N. ..... Gastonia
*Goley, Wm. R. ..... Graham
Goodman, A. B. ..... Lenoir
*Goodman, E. G. ..... Lanvale
*Goodman, A. W. ..... Raleigh
*Gouger, Geo. J. ..... Concord
Gove, Anna M. ..... Greensboro
Grady, James C. ..... Kenly
Grady, Wm. Earle ..... Tryon
*Graham, Joseph ..... Charlotte
*Graham, Wm. A. ..... Charlotte
Grantham, Wm. L. ..... Asheville
Grayson, C. S. ..... High Point
*Griffin, J. A. ..... Clayton
Griggs, W. T. ..... Poplar Branch
Halford, J. W. ..... Lillington
*Hall, Wright ..... Wilmington
*Halsey, B. F. ..... Roper
Hardy, Ira M. ..... Kinston
*Hargrove, R. H. ..... Robersonville
Harper, J. H. ..... Snow Hill
Harrill, L. B. ..... Caroleen
*Harris, F. R. ..... Henderson
Harrison, Edmund ..... Greensboro
Harriss, A. H. ..... Wilmington
*Harriss, I. A. ..... Weaversville
Hathcock, Thos. A. ..... Norwood
Hays, Benj. K. ..... Oxford
*Haywood, F. J. ..... Raleigh
*Haywood, Hubert, Sr. ..... Raleigh
*Herring, B. S. ..... Wilson
Hicks, Calvin S. ..... Durham
*Hicks, I. F. ..... Dunn
*Hicks, Romeo ..... Henrietta
*Hicks, Wm. N. ..... Durham
Highsmith, Chas. ..... Dunn
Highsmith, J. F. ..... Fayetteville
Highsmith, Seavy ..... Fayetteville
*Hill, L. H. ..... Germantown
Hill, Wm. I. ..... Albemarle
Hocutt, Battle A. ..... Clayton
Holloway, Robt. L. ..... West Durham
Holt, Wm. P., Sr. ..... Erwin
*Holt, Wm. T. ..... Greensboro
*Hooks, Thel ..... Smithfield
Hoover, C. H. ..... Crouse
Horton, W. C. ..... Raleigh

* Deceased.

Houck, Albert F.....Lenoir
Houser, E. A.....Shelby
Hovis, Leighton W.....Charlotte
Hubbard, C. C.....Farmer
*Hudson, Wm. L.....Dunn
*Hughes, Francis W.....New Bern
*Hunter, L. W.....Charlotte
Hunter, W. Myers.....Charlotte
Hutchens, E. M.....No. Wilkesboro
Ingram, Chas. B.....Mt. Gilead
*Irwin, J. R.....Charlotte
*Jenkins, Chas. L.....Raleigh
Jewett, Robert D.....Wilmington
John, Peter.....Laurinburg
Johnson, N. M.....Durham
Johnson, Thos. C.....Lumberton
Jonas, John F.....Marion
*Jones, Clara E.....Goldsboro
*Jones, A. G.....Walnut Cove
Jones, R. DuVal.....New Bern
Jones, W. M.....Greensboro
*Jordan, Chas. S.....Asheville
*Jordan, T. M.....Raleigh
*Jordan, Wm. S.....Fayetteville
Judd, J. M.....Varina
*Julian, Charles A.....Greensboro
*Kapp, Henry H.....Winston-Salem
Kent, Alfred A.....Winter Park, Fla.
Kerr, J. Edwin.....Winston-Salem
King, Parks M.....Charlotte
King, Richard M.....Concord
Kinsman, Henry.....Hamlet
Kirby, Guy S.....Marion
Kirk, W. R.....Hendersonville
Kitchin, Thurman D.....Wake Forest
*Knight, J. B. H.....Wiliamston
Knight, Wm. P.....Greensboro
*Knox, A. W.....Raleigh
Koonce, S. E.....Wilmington
Kornegay, Lemuel W...Rocky Mount
Lafferty, Robt. H.....Charlotte
Lamm, Isaac W.....Raleigh
Lattimore, E. B.....Shelby
*Laughinghouse, Chas. O'H.....Raleigh
Ledbetter, James McQ...Rockingham
Lee, Lawrence V.....Lattimore
*Leggett, Kenelm .....Hobgood
*Lewis, Geo. W.....Wilson
*Lewis, H. W.....Jackson
*Lewis, R. H.....Raleigh
Lilly, Jas. M.....Fayetteville
Linville, A. Y.....Winston-Salem
*Lockett, Everett A.....Winston-Salem
*Long, Benj. L.....Hamilton
*Long, Geo. W.....Graham
Long, H. F.....Statesville
*Long, J. W.....Greensboro
Long, Vann McKee....Winston-Salem
Love, Bedford E.....Roxboro
*Love, W. J.....Wilmington
*Lyle, S. H.....Franklin
MacFadyen, Paul R.....Concord
MacNider, Wm. deB.....Chapel Hill
Malloy, S. A.....Yanceyville
Manning, I. H.....Chapel Hill
*Manning, J. M.....Chapel Hill
Mariner, N. B.....Belhaven
*Matheson, James P.....Charlotte
Matthews, Jas. O.....Clinton
Matthews, M. L.....Sanford
McAnally, W. J.....High Point
*McBrayer, L. B.....Southern Pines
McCain, Wm. R.....High Point
McCampbell, John.....Morganton
McCoy, Thos. M.....Charlotte
McCracken, C. M.....Fairview
McCracken, J. R.....Waynesville
*McDonald, A. D.....Wilmington
McGeachy, R. S.....Weldon
*McGee, J. W.....Raleigh
McGehee, John Wm.....Reidsville
McIntosh, D. M.....Old Fort
McIver, Lynn.....Sanford
*McKay, A. M.....Summerville
*McKay, John A.....Buies Creek
McKay, Joseph F.....Buies Creek
*McKee, James.....Raleigh
*McKenzie, W. W.....Salisbury
McLaughlin, C. S.....Charlotte
McLaughlin, J. E.....Statesville
*McLean, John W.....Godwin
McLemore, Geo. A.....Smithfield
McLeod, A. H.....Aberdeen
*McMillan, Benj. F.....Red Springs
*McMillan, J. D.....Lumberton
*McMillan, J. L.....Red Springs
*McMillan, W. D.....Wilmington
*McNeill, J. W.....Fayetteville

* Deceased.

*McNeill, Wm. M. ..... Buies Creek
McPhail, L. D. ..... Charlotte
McPherson, S. D. ..... Durham
Meadows, W. J. ..... Greensboro
Mebane, W. C. ..... Wilmington
*Melvin, Wayman C. ..... Linden
Menzies, H. C. ..... Hickory
Merritt, John H. ..... Woodsdale
*Michaux, E. R. ..... Greensboro
*Miller, J. F. ..... Goldsboro
Miller, Robert B. ..... Goldsboro
*Minor, Chas. L. ..... Asheville
*Misenheimer, C. A. ..... Charlotte
*Misenheimer, Theo. F. ..... Morven
Mitchell, Paul H. ..... Ahoskie
Monk, Henry L. ..... Salisbury
*Monroe, W. A. ..... Sanford
Montgomery, Harry M. ..... Burlington
*Montgomery, John C. ..... Charlotte
Moore, C. E. ..... Wilson
*Moore, Edwin G. ..... Elm City
Morris, J. A. ..... Oxford
Moseley, Chas. W. ..... Greensboro
Mudgett, W. C. ..... Southern Pines
Munroe, H. Stokes ..... Charlotte
Munroe, J. P. ..... Charlotte
*Murphy, John G. ..... Wilmington
*Murphy, W. B. ..... Snow Hill
Myers, John Q. ..... Charlotte
Nalle, B. C. ..... Charlotte
Neal, John W. ..... Monroe
Nelson, R. J. ..... Robersonville
Newell, H. A. ..... Henderson
Newell, Leon B. ..... Charlotte
Nichols, Rhodes E. ..... Durham
*Nicholson, J. L. ..... Richland
Nicholson, P. A. ..... Washington
*Nicholson, Sam T. ..... Washington
*Nisbet, W. O. ..... Charlotte
*Noble, R. J. ..... Selma
Noble, R. P. ..... Raleigh
Nobles, Jos. E. ..... Greenville
Norris, Henny ..... Waverly Mills, S. C.
Oates, George ..... Grover
*Olive, P. W. ..... Fayetteville
Orr, Charles C. ..... Asheville
Orr, Porter B. ..... Asheville
Paddison, John R. ..... Kernersville
Parker, G. E. ..... Benson
*Parrott, J. M. ..... Kinston
Parrott, Wm. Thomas ..... Kinston
*Pate, Wm. T. ..... Gibson
Patterson, Jos. F. ..... New Bern
Peeler, Clarence N. ..... Charlotte
Peeler, John H. ..... Salisbury
Peete, C. H. ..... Warrenton
*Pemberton, Wm. D. ..... Concord
Pepper, John Kerr ..... Winston-Salem
Person, James B., Jr. ..... Selma
*Perry, M. P. ..... Macon
Peterson, C. A. ..... Spruce Pine
*Petrie, Robt. Wm. ..... Murphy
Pfohl, Samuel F. ..... Winston-Salem
*Pharr, T. F. ..... Concord
*Pharr, Wm. W. ..... Charlotte
Phifer, Edward W. ..... Morganton
*Phillips, Matthew D. ..... Dalton
Pickett, John A. ..... Burlington
*Picot, L. J. ..... Littleton
Pollock, Raymond ..... New Bern
*Pope, Henry T. ..... Lumberton
Pressly, G. W. ..... Charlotte
*Prince, D. M. ..... Laurinburg
*Quickel, Thos. C. ..... Gastonia
Rankin, W. S. ..... Charlotte
Ray, John B. ..... Leaksville
Ray, O. L. ..... Raleigh, Rt. 1
Reaves, W. P. ..... Greensboro
Redding, Alex H. ..... Asheboro
*Register, Edw. C. ..... Charlotte
Register, F. M. ..... Kinston
Reid, Geo. P. ..... Forest City
Reitzel, Claude E. ..... High Point
Reynolds, C. V. ..... Raleigh
Rhodes, James S. ..... Williamston
Rhyne, Robert Edgar ..... Gastonia
Ricks, Leonard E. ..... Fairmont
Riddle, J. B. ..... Morganton
Ringer, Paul H. ..... Asheville
*Ritter, F. W. ..... Moyock
*Roberson, Chas. ..... Greensboro
Rodman, J. C. ..... Washington
*Rodwell, J. W. ..... Mocksville
Rogers, Jas. Rufus ..... Raleigh
Rogers, Wiley A. ..... Franklin
Rose, A. H. ..... Smithfield
Ross, Geo. H. ..... East Durham

* Deceased.

Royall, M. A. ..... Elkin
Royster, H. A. ..... Raleigh
Royster, S. S. ..... Shelby
*Royster, W. I. ..... Raleigh
Salley, E. McQueen ..... Hendersonville
Salmons, H. C. ..... Elkin
Saunders, Jos. H. ..... Williamston
Sawyer, C. J. ..... Windsor
Sawyer, W. W. ..... Elizabeth City
*Schaffner, J. F., Sr. ..... Winston-Salem
*Schaub, O. P. ..... Winston-Salem
*Schonwald, J. T. ..... Wilmington
*Sevier, D. E. ..... Asheville
Sevier, J. T. ..... Asheville
*Shamburger, J. B. ..... Star
Sharpe, Frank L. ..... Statesville
*Shaw, W. G. ..... Wagram
*Shields, H. B. ..... Carthage
Sikes, G. L. ..... Salemburg
*Sikes, G. T. ..... Creedmoor
Skinner, Lonis C. ..... Greenville
Slate, John S. ..... Winston-Salem
Slate, W. C. ..... Spencer
*Smith, J. B. ..... Pilot Mountain
Smith, O. F. ..... Scotland Neck
*Smith, R. A. ..... Goldsboro
*Smithwick, Jas. E. ..... Jamesville
Smoot, J. E. ..... Concord
*Snipes, E. P. ..... Jonesboro
Spainhour, Ellis H. ..... Winston-Salem
*Speight, R. H., Sr. ..... Whitakers
Spencer, W. O. ..... Winston-Salem
*Stamps, Thos. ..... Lumber Bridge
Stanton, D. A. ..... High Point
*Stevens, J. A. ..... Clinton
Stevens, M. L. ..... Asheville
*Stewart, H. D. ..... Monroe
*Stokes, Jas. Ernest ..... Salisbury
Street, M. E. ..... Glendon
Strickland, Edw. F. ..... Winston-Salem
Stringfield, Samuel L. ..... Waynesville
Stringfield, Thos. ..... Waynesville
*Strong, Chas. Moore ..... Charlotte
*Summerell, E. M. ..... China Grove
*Summers, Chas. L. ..... Baltimore, Md.
Sutton, Carl W. ..... Richlands
Swann, Jos. F. ..... Raleigh
*Tayloe, D. T., Sr. ..... Washington
*Taylor, I. M. ..... Morganton
Taylor, J. N. ..... Greensboro
Taylor, Wm. L. ..... Oxford
Tennent, G. S. ..... Asheville
*Thomas, G. G. ..... Wilmington
Thompson, Alex. Frank ..... Troy
Thompson, C. D. ..... High Point
*Trantham, H. T. ..... Salisbury
Tucker, John Hill ..... Charlotte
*Tull, Henry ..... Kinston
*Turner, J. P. ..... Greensboro
Tyson, T. D. ..... Mebane
Utley, H. H. ..... Benson
*Van Poole, C. M. ..... Salisbury
Vestal, W. J. ..... Lexington
Vick, Geo. D. ..... Selma
*Von Ruck, Karl ..... Asheville
Walker, H. D. ..... Elizabeth City
Ward, Jesse E. ..... Robersonville
*Ward, W. H. ..... Plymouth
*Way, J. Howell ..... Waynesville
*Weaver, H. B. ..... Asheville
Weaver, W. J. ..... Asheville
Webb, B. G. ..... Andrews
Webb, W. P. ..... Rockingham
Wessell, Jno. C. ..... Wilmington
West, Robt. M. ..... Salisbury
*Wharton, L. D. ..... Smithfield
Whisnant, A. M. ..... Charlotte
*Whitaker, R. A. ..... Kinston
*White, J. W. ..... Wilkesboro
*Whitehead, John ..... Salisbury
*Whitehead, W. H. ..... Rocky Mount
*Whitfield, Wm. Cobb ..... Salisbury
*Whittington, W. P. ..... Asheville
Whittington, Wm. W. ..... Snow Hill
Wilcox, J. W. ..... West End
Wilkerson, Charles B. ..... Raleigh
Wilkins, S. A. ..... Dallas
Williams, Albert F. ..... Wilson
Williams, Claude B. ..... Elizabeth City
*Williams, J. H. ..... Asheville
Williams, John D. ..... Guilford Station
Willis, A. P. ..... Candler
*Wilson, A. R. ..... Greensboro
*Wilson, Robt. B. ..... Newton Grove
*Wood, J. W. ..... Boiling Springs
Woodson, Charles W. ..... Salisbury
Wright, Jno. B. ..... Raleigh
Yarborough, Richard F. ..... Louisburg
*Young, R. S. ..... Concord

* Deceased.

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany.....Baltimore, Md.
*W. W. Keen.....Philadelphia, Pa.
*J. Allison Hodges.....Richmond, Va.
*R. L. Payne.....Norfolk, Va.
*J. N. McCormack.....Bowling Green, Ky.
R. L. Payne, Jr.....Norfolk, Va.
*J. L. Ludlow, C.E.....Winston-Salem
Paul V. Anderson.....Richmond, Va.
Stuart McGuire.....Richmond, Va.
William J. Mayo.....Rochester, Minn.
William Seaman Bainbridge.....New York, N. Y.
William Sharpe.....New York, N. Y.
*William McKim Marriott.....St. Louis, Mo.
James K. Hall.....Richmond, Va.

* Deceased.

MOORE COUNTY MEDICAL SOCIETY MEDAL

In 1927 the Moore County Medical Society kindly put up enough money, the interest from which would pay for a medal to be given for the best paper read before the meeting each year. No one is eligible to receive this medal except Fellows of the Medical Society of the State of North Carolina in good standing; no invited guest is allowed to compete.

Each Section Chairman selects a committee of three to pass on the best paper written in their section. These six papers are then turned over to the State Committee who pass on the best of the six papers, the winner in this instance to receive the medal. The following Fellows have been awarded this medal:

1928—Paul Pressly McCain, M.D.....Sanatorium
"The Diagnosis and Significance of Juvenile Tuberculosis"
(From Section on Pediatrics)

1929—A. B. Holmes, M.D.....Fairmont
"The Treatment of Uremia"
(From Section on Chemistry, Materia Medica and Therapeutics)

1930—C. T. Smith, M.D., and W. Bernard Kinlaw, M.D.....Rocky Mount
"The Clinical Consideration of Anaemia of Pregnancy and of Puerperium"
(From Section on Practice of Medicine)

1931—F. C. Smith, M.D.....Charlotte
"Practical Value of Perimetry in Intracranial Conditions; Case Reports" (tumors, vascular disease, toxemia, syphilis and trauma)
(From Section on Eye, Ear, Nose and Throat)

1932—Charles I. Allen, M.D.....Wadesboro
"An Improved Splint for Treating Fractures of the Lower Extremity Showing Reduction and Skeletal Distraction Attachments"
(From Section on Surgery)

1933—H. F. Sloan, M.D.....Charlotte
"Some General Remarks about Cataract Surgery, with report of 100 consecutive uncomplicated Cataract Operations"
(From Section on Ophthalmology and OtoLaryngology)
J. R. Adams, M.D.....Charlotte
"Hypo-glycaemia in Children"
(From Section on Pediatrics)

1934—Fred E. Motley, M.D.....Charlotte
"Complications of Mastoiditis with Special Reference to Septicemia"
(From Section on Ophthalmology and OtoLaryngology)

1935—Arthur H. London, M.D.....Durham
"The Composition of an Average Pediatrics Practice"
(From Section on Pediatrics)

1936—V. K. Hart, M.D.....Charlotte
"Etiological and Therapeutic Aspects of Bronchiectasis with Clinical Observations on Bronchial Lavage by the Stitt Method"
(From Section on Ophthalmology and OtoLaryngology)

1937—No award made.

OFFICERS 1938-1939

OFFICERS 1937-1938

President—Wingate M. Johnson, M.D. ..... Winston-Salem
President-elect—J. Buren Sidbury, M.D. ..... Wilmington
First Vice President—R. B. McKnight, M.D. ..... Charlotte
Second Vice President—J. F. Abel, M.D. ..... Waynesville
Secretary-Treasurer—T. W. M. Long, M.D., 1937-1940 ..... Roanoke Rapids
Honarary Secretary for Life—L. B. McBrayer, M.D. ..... Southern Pines

OFFICERS 1938-1939

President—J. Buren Sidbury, M.D. ..... Wilmington
President-elect—William Allan, M.D. ..... Charlotte
First Vice President—Claude B. Williams, M.D. ..... Elizabeth City
Second Vice President—M. D. Hill, M.D. ..... Raleigh
Secretary-Treasurer—T. W. M. Long, M.D. ..... Roanoke Rapids

COUNCILLORS 1937-1940

First District—H. D. Walker, M.D. ..... Elizabeth City
Second District—Paul F. Whitaker, M.D. ..... Kinston
Third District—W. Houston Moore, M.D. ..... Wilmington
Fourth District—G. W. Mitchell, M.D. ..... Wilson
Fifth District—W. D. James, M.D. ..... Hamlet
Sixth District—George L. Carrington, M.D. ..... Burlington
Seventh District—B. H. Kendall, M.D. ..... Shelby
Eighth District—R. C. Mitchell, M.D. ..... Mount Airy
Ninth District—J. R. Terry, M.D. ..... Lexington
Tenth District—Julian Moore, M.D. ..... Asheville

CHAIRMEN OF SECTIONS, 1938-1939

Public Health and Education—L. L. Parks, M.D. ..... Tarboro
Surgery—Robert H. Crawford, M.D. ..... Rutherfordton
Ophthalmology and OtoLaryngology—T. C. Kerns, M.D. ..... Durham
Gynecology and Obstetrics—Frank A. Sharpe, M.D. ..... Greensboro
Pediatrics—D. E. Robinson, M.D. ..... Burlington
Practice of Medicine—Paul A. Yoder, M.D. ..... Winston-Salem
General Practice of Medicine and Surgery—R. L. Murray, M.D. ..... Raeford

DELEGATES TO AMERICAN MEDICAL ASSOCIATION

John Q. Myers, M.D. (1938) ..... Charlotte
M. L. Stevens, M.D. (1938-1939) ..... Asheville
T. W. M. Long, M.D., Alternate ..... Roanoke Rapids
Wingate M. Johnson, M.D., Alternate ..... Winston-Salem

DELEGATES TO MEDICAL SOCIETY OF VIRGINIA

F. H. Garris, M.D. ..... Lewiston
W. G. Suiter, M.D. ..... Weldon
B. M. Nicholson, M.D. ..... Enfield
Paul F. Whitaker, M.D. ..... Kinston

DELEGATES TO SOUTH CAROLINA MEDICAL SOCIETY

L. N. Glenn, M.D. ..... Gastonia
John Q. Myers, M.D. ..... Charlotte
W. D. James, M.D. ..... Hamlet

COMMITTEES

Medical Society Foundation

Martin L. Stevens, M.D. (4 years) ..... Asheville
John Q. Myers, M.D. (3 years) ..... Charlotte
W. S. Rankin, M.D. (2 years) ..... Charlotte
L. C. Skinner, M.D. (1 year) ..... Greenville

Obituaries

J. B. Cranmer, M.D., *Chairman* ..... Wilmington
J. F. Abel, M.D. ..... Waynesville
Ben J. Lawrence, M.D. ..... Raleigh

Legislation

Hubert B. Haywood, M.D., *Chairman* ..... Raleigh
Donnell B. Cobb, M.D. ..... Goldsboro
George L. Carrington, M.D. ..... Burlington

Moore County Medical Society Medal

J. S. Milliken, M.D., *Chairman* ..... Southern Pines
Thurman D. Kitchin, M.D. ..... Wake Forest
I. H. Manning, M.D. ..... Chapel Hill

Hospitals

W. D. James, M.D., *Chairman* ..... Hamlet
J. B. Whittington, M.D. ..... Winston-Salem
W. I. Wooten, M.D. ..... Greenville

Cancer

H. B. Ivey, M.D., *Chairman* ..... Goldsboro
C. C. Carpenter, M.D. ..... Wake Forest
Thos. L. Lee, M.D. ..... Kinston

Public Relations

D. W. Holt, M.D., *Chairman* ..... Greensboro
T. W. M. Long, M.D. ..... Roanoke Rapids
P. P. McCain, M.D. ..... Sanatorium

Advisory to Industrial Commission

Battle A. Hocutt, M.D., *Chairman* ..... Clayton
W. G. Suiter, M.D. ..... Weldon
J. F. Highsmith, Jr., M.D. ..... Fayetteville

Finance

Vance P. Peery, M.D., *Chairman* ..... Goldsboro
Westbrook Murphy, M.D. ..... Asheville
W. M. Coppridge, M.D. ..... Durham

Printing

T. W. M. Long, M.D., *Chairman* ..... Roanoke Rapids
B. C. Willis, M.D. ..... Rocky Mount
E. C. Judd, M.D. ..... Raleigh

Post-Graduate Medical Study

Paul H. Ringer, M.D., *Chairman* ..... Asheville
James W. Vernon, M.D. ..... Morganton
William H. Smith, M.D. ..... Goldsboro

Member Advisory Committee on Maternity and Infancy for the Children's Bureau

W. C. Davidson, M.D. ..... Durham

Syphilis Control

J. C. Knox, M.D., *Chairman* ..... Raleigh
Louis C. Skinner, M.D. ..... Greenville
Hamilton W. McKay, M.D. ..... Charlotte

Advisory to Woman's Auxiliary

V. S. Caviness, M.D., *Chairman* ..... Raleigh
W. T. Rainey, M.D. ..... Fayetteville
I. T. Mann, M.D. ..... High Point

Social Security Act

Forrest M. Houser, M.D., *Chairman* ..... Cherryville
Paul H. Ringer, M.D. ..... Asheville
W. C. Bostic, M.D. ..... Forest City
T. G. Upchurch, M.D. ..... Smithfield
Benj. J. Lawrence, M.D. ..... Raleigh
Paul F. Whitaker, M.D. ..... Kinston
M. P. Whichard, M.D. ..... Edenton
D. W. Holt, M.D. ..... Greensboro
Geo. L. Carrington, M.D. ..... Burlington
Thos. L. Carter, M.D. ..... Gatesville
T. W. M. Long, M.D. ..... Roanoke Rapids

To Study Four-Year Medical School

C. F. Strosnider, M.D., *Permanent Chairman* ..... Goldsboro
Benj. J. Lawrence, M.D. ..... Raleigh
James W. Vernon, M.D. ..... Morganton
K. B. Pace, M.D. ..... Greenville
T. W. M. Long, M.D. ..... Roanoke Rapids
Hubert B. Haywood, M.D. ..... Raleigh
W. D. James, M.D. ..... Hamlet
C. C. Carpenter, M.D., Dean, Wake Forest Medical School ..... Wake Forest
Wm. deB. MacNider, M.D., Dean, Medical School, University of North Carolina ..... Chapel Hill

BOARD OF MEDICAL EXAMINERS FOR NURSES

President—Miss Josephine Kerr, R.N. ..... Charlotte
Secretary-Treasurer and Education Director—
Miss Bessie M. Chapman, R.N. ..... Raleigh
B. C. Willis, M.D. (From Hospital Association) ..... Rocky Mount
T. C. Johnson, M.D. (From Medical Society, 1938-1940) ..... Lumberton

BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA, 1938-1944

Karl B. Pace, M.D. ..... Greenville
William M. Coppridge, M.D. ..... Durham
Frank A. Sharpe, M.D. ..... Greensboro
Lewis W. Elias, M.D. ..... Asheville
J. Street Brewer, M.D. ..... Roseboro
W. D. James, M.D. ..... Hamlet
L. A. Crowell, Jr., M.D. ..... Lincolnton

ARRANGEMENTS

T. W. M. Long, M.D., *Chairman* ..... Roanoke Rapids
Place of Meeting ..... Cruise to Bermuda
Date ..... May 9-14, 1939

PROGRAM OF GENERAL SESSIONS

FIRST GENERAL SESSION

TUESDAY, May 3, 9:30 a.m.

1. Call to Order, T. W. M. Long, M.D., Chairman, Committee on Arrangements.
2. Announcements, T. W. M. Long, M.D.
3. Presentation of the President, Wingate M. Johnson, M.D., Winston-Salem.
4. President's Address, Wingate M. Johnson, M.D., Winston-Salem.
5. Presentation President's Jewel to Wingate M. Johnson, M.D., by President-elect, J. Buren Sidbury, M.D., Wilmington.
6. Report of Committee on Award of Moore County Medical Society Medal for Best Paper read at 1937 Session and Presentation of Medal—
   J. S. Milliken, M.D., Southern Pines.
   Thurman D. Kitchin, M.D., Wake Forest.
   I. H. Manning, M.D., Chapel Hill.
7. Report Obituary Committee
   Frederick R. Taylor, M.D., High Point.
8. Address (Guest Speaker) Edward A. Strecker, M.D., Professor of Psychiatry, School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania. "Functional Illness and the Medical Psychology Needed by the Practitioner in its treatment."
9. George M. Cooper, M.D., Raleigh—"A State-wide Program for a Maternity and Infancy Service." From Section on Public Health and Education.
10. Robert A. Ross, M.D., Durham—"Ovarian Cysts and Tumors." From Section on Gynecology and Obstetrics.
11. Charles R. Bugg, M.D., Raleigh—"Some Aspects of the Diphtheria Problem." From Section on Pediatrics.

SECOND GENERAL SESSION

WEDNESDAY, May 4, 9:00 a.m.

1. W. J. Lackey, M.D., Fallston—"The Function and Field of the Family Doctor." From Section on General Practice of Medicine and Surgery.
2. Address (Guest Speaker) Charles Gordon Heyd, M.D., Professor of Surgery, New York Postgraduate Hospital. "Clinical Essentials in Abdominal Diagnosis."
3. V. P. Peery, M.D., Kinston—Lantern Slides on "Endoscopy." From Section on Opthalmology and OtoLaryngology.
4. Julian M. Ruffin, M.D., Durham—"Amebic Dysentery in North Carolina." From Section on Practice of Medicine.
5. Raymond Thompson, M.D., Charlotte—"Mortality in Prostatic Surgery, Technic of Prostatic Resection—Motion Pictures." From Section on Surgery.

11:45 a.m.—Election State Board of Medical Examiners.

12:00 m.—Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health.

MEMBERS OF THE NORTH CAROLINA STATE BOARD OF HEALTH

S. D. Craig, M.D., President, Winston-Salem
J. N. Johnson, D.D.S., Vice President, Goldsboro
G. G. Dixon, M.D., Ayden
H. Lee Large, M.D., Rocky Mount
H. G. Baity, Sc.D., Chapel Hill
W. T. Rainey, M.D., Fayetteville
Hubert B. Haywood, M.D., Raleigh
James P. Stowe, Ph.G., Charlotte
John LaBruce Ward, M.D., Asheville

Executive Staff

Carl V. Reynolds, M.D., Secretary and State Health Officer.

G. M. Cooper, M.D., Assistant State Health Officer and Director Division of Health Education, Crippled Children's Work, and Maternal and Child Health Service.

Warren H. Booker, C.E., Director Division of Sanitary Engineering and Malaria Control.

Ernest A. Branch, D.D.S., Director Division of Oral Hygiene.

John H. Hamilton, M.D., Director Division of Laboratories.

J. C. Knox, M.D., Director Division of Epidemiology and Venereal Disease Control.

R. T. Stimpson, M.D., Director Division of Vital Statistics.

R. E. Fox, M.D., Director Division of County Health Work.

H. F. Easom, M.D., Director Division Industrial Hygiene.

THIRD GENERAL SESSION

Wednesday, May 4, 5:30 p.m.

1. Report of the House of Delegates.
2. Unfinished Business.
3. New Business.
4. Installation President, J. Buren Sidbury, M.D., and President-elect by retiring President, Wingate M. Johnson, M.D.
5. Remarks by the President and President-elect.
6. Adjourn sine die.

SECTION MEETINGS

SECTION ON GENERAL PRACTICE OF MEDICINE AND SURGERY

TUESDAY, MAY 3, 2:00 p.m.

W. J. Lackey, M.D., Fallston, *Chairman*

1. Wingate M. Johnson, M.D., Winston-Salem—"The Importance of Little Things in the Practice of Medicine."
2. E. B. Lattimore, M.D., Shelby—"Signs and Symptoms of Pneumonia with Special Reference to the Diagnosis of the Different Types." Discussion opened by J. Fred Nash, M.D., St. Pauls.
3. John Q. Myers, M.D., Charlotte—"The Care of Elderly Patients." Discussion by J. O. McClelland, M.D., Maxton and G. G. Dixon, M.D., Ayden.
4. H. F. Starr, M.D., Greensboro—"Medical Examinations for Life Insurance." Discussion opened by Harry L. Brockmann, M.D., High Point.
5. J. W. McGehee, M.D., Reidsville—"The General Practitioner." Discussion by Roy Mitchell, M.D., Mt. Airy and John B. Ray, M.D., Leaksville.
6. John H. Mickley, M.D., Tabor City—"Syphilis: Its Management in General Practice." Discussion opened by Thurston FormyDuval, M.D., Whiteville.
7. W. J. Lackey, M.D., Fallston—"The Function and Field of the Family Doctor." Before Second General Session, May 4.

SECTION ON GYNECOLOGY AND OBSTETRICS

TUESDAY, MAY 3, 2:00 p.m.

Bayard Carter, M.D., Durham, *Chairman*

1. Lester A. Wilson, M.D., Professor of Obstetrics and Gynecology, Charleston Medical College, Charleston, South Carolina (Guest Speaker)—"Late Puerperal Complications and Care."
2. O. Hunter Jones, M.D., Charlotte—"Pelvic Architecture and Classification." Discussion opened by W. B. Graham, M.D., Durham.
3. John C. Burwell, M.D., Greensboro—"Vaginal Hysterectomy." Discussion opened by L. C. Ogburn, M.D., Winston-Salem.
4. Walter L. Thomas, M.D., Durham—"Lymphogranulomatosis Venerum." Discussion opened by R. B. Dunn, M.D., Greensboro.
5. Richard T. Ferguson, M.D., Charlotte—"Ultimate Results in 218 Patients with Sterility." Discussion opened by Cloyce Tew, M.D., Raleigh.
6. Leslie Lee, M.D., Kinston—"Treatment of Pelvic Infection." Discussion opened by L. deCamp, Fayetteville.
7. Robert A. Ross, M.D., Durham—"Ovarian Cysts and Tumors." Before First General Session, May 3.

SECTION ON PEDIATRICS

TUESDAY, MAY 3, 2:00 p.m.

Kenneth B. Geddie, M.D., High Point, *Chairman*

1. Kenneth B. Geddie, M.D., High Point—"Diphtheria Immunization and Diphtheria Immunity."
2. John LaBruce Ward, M.D., Asheville—"Rocky Mountain Spotted Fever."

3. Jean McAllister, M.D., Greensboro—"Cerebral Complications of Some of the Acute Communicable Diseases."

4. Jasper Stewart Hunt, M.D., Charlotte—"Certain Responsibilities of the Pediatrician toward the Production of a Happy Adult."

5. Raymond S. Crispell, M.D., Durham—"Neuro Psychiatric Problems Associated in Cerebral Birth Injuries."

6. Charles R. Bugg, M.D., Raleigh—"Some Aspects of the Diphtheria Problem." Before the First General Session, May 3.

SECTION ON PUBLIC HEALTH AND EDUCATION

TUESDAY, MAY 3, 2:00 p.m.

ROY NORTON, M.D., Raleigh, *Chairman*

1. William P. Richardson, M.D., Chapel Hill—"A Tuberculosis Case-Finding Program for a Rural Health Department."

2. J. A. Morris, M.D., Oxford—"Health Education Responsibilities and Opportunities in the Local Health Department."

3. Wm. deB. MacNider, M.D., Chapel Hill—"Importance of Continuing Plan of Medical Training."

4. R. B. McKnight, M.D., Charlotte—"Appendicitis; a Problem for Official Public Health Agencies as well as for the Internist and Surgeon."

5. George M. Cooper, M.D., Raleigh—"A State-wide Program for a Maternity and Infancy Service." Before the First General Session, May 3.

SECTION ON OPTHALMOLOGY AND OTOLARYNGOLOGY

WEDNESDAY, MAY 4, 2:00 p.m.

A. C. MCCALL, M.D., Asheville, *Chairman*

1. A. C. McCall, M.D., Asheville (Chairman's Address).

2. C. W. Bailey, M.D., Rocky Mount—"Surgery of the Nasal Septum and Turbinates." Discussion opened by L. M. Griffith, M.D., Asheville.

3. Horace Strickland, M.D., Greensboro—Case Presentation, "Eisokonic Lenses."

4. E. G. Breeding, M.D., Washington, D. C. (Guest Speaker)—"On Some Phase of the Ear."

5. Henry Sloan, M.D., Charlotte—"Intraocular Changes in the Toxemias of Pregnancy."

6. G. B. Ferguson, M.D., Durham—"Streptococcus Laryngitis." Discussion opened by V. K. Hart, M.D., Charlotte.

7. M. R. Gibson, M.D., Raleigh—"The Otorhinolaryngologist Role in the Treatment of Bronchial Asthma." Discussions by A. J. Ellington, M.D., Burlington, and J. H. Fitzgerald, M.D., Smithfield.

8. V. P. Peery, M.D., Kinston—Lantern Slides on "Endoscopy." Before Second General Session, May 4.

SECTION ON PRACTICE OF MEDICINE

WEDNESDAY, MAY 4, 2:00 p.m.

J. R. PADDISON, M.D., Kernersville, *Chairman*

1. E. B. Craven, Jr., M.D., Lexington—"On Certain Fungus Infections of the Lungs and their Relation to Asthma." Discussion opened by Norman C. Conant, M.D., Durham.

2. Elbert Persons, M.D., Durham—"The Indications for Specific Treatment of Pneumonia in a North Carolina Hospital." Discussion opened by Hubert B. Haywood, M.D., Raleigh.

3. Allyn B. Choate, M.D., Charlotte—"Treatment of the Heart in Lobar Pneumonia." Discussion opened by Elias Faison, M.D., Charlotte.

4. Walter R. Johnson, M.D., Asheville—"The Value of the Galactose Tolerance Test in the Differential Diagnosis of Jaundice." Discussion opened by Elias Faison, M.D., Charlotte.

5. G. L. Donnelly, M.D., Chapel Hill—"Sulfanilamide—Pharmacology and Therapeutics." Discussion opened by William Allan, M.D., Charlotte, and W. M. Coppridge, M.D., Durham.

6. Frederick R. Taylor, M.D., High Point—"The Neurological Aspects of Serum Sickness." Discussion opened by R. W. Graves, M.D., Durham.

7. Julian M. Ruffin, M.D., Durham—"Amebic Dysentery in North Carolina." Before Second General Session, May 4.

SECTION ON SURGERY

WEDNESDAY, MAY 4, 2:00 p.m.

JULIAN A. MOORE, M.D., Asheville, *Chairman*

1. Clarence E. Gardner, Jr., M.D., Durham—"Delayed Operation in the Treatment of the Ruptured Appendix." Discussion opened by Randolph Jones, Jr., M.D., Durham.

2. Donnell B. Cobb, M.D., Goldsboro—"Perineal Hernia." Discussion opened by R. A. Ross, M.D., Durham.

3. R. B. Davis, M.D., Greensboro—"Pathology of the Lining of the Blood Vessels." Discussion opened by Whitehead McKenzie, M.D., Salisbury.

4. R. B. McKnight, M.D., Charlotte—"The Physiological Implication in Gastric Surgery." Discussion opened by Russell Lyday, M.D., Greensboro.

5. Thomas D. Sparrow, M.D., Charlotte—"The Tube Pedicle Skin Graft, its Usefulness to the General Surgeon." Discussion opened by W. H. Sprunt, Jr., M.D., Winston-Salem.

6. C. L. Haywood, Jr., M.D., and Charles C. Roper, M.D., Elkin—"The Treatment of the Fractures of the Spine in the Small Hospital." Discussion opened by Oscar Miller, M.D., Charlotte.

7. T. R. Huffines, M.D., Asheville—"The Diagnosis of Renal Tuberculosis." Discussion opened by Wm. Coppridge, M.D., Durham.

8. Raymond Thompson, M.D., Charlotte—"Mortality in Prostatic Surgery, Technic of Prostatic Resection—Motion Pictures." Before Second General Session, May 4.

WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

OFFICERS

President—Mrs. W. T. Rainey ..... Fayetteville
President-elect—Mrs. J. A. Elliott ..... Charlotte
First Vice President and Chairman of Organization—
Mrs. J. R. Terry ..... Lexington
Second Vice President and Chairman of Bed—
Mrs. J. B. Sidbury ..... Wilmington
Third Vice President and Chairman of Loan Fund—
Mrs. J. A. Keiger ..... Greensboro
Chairman of Past Presidents—Mrs. P. P. McCain ..... Sanatorium
Corresponding Secretary—Mrs. C. D. Thomas ..... Sanatorium
Recording Secretary—Mrs. George W. Mitchell ..... Wilson
Treasurer—Mrs. E. Clarence Judd ..... Raleigh

COUNCILLORS

First District—Mrs. T. L. Carter ..... Gatesville
Second District—Mrs. E. B. Beasley ..... Fountain
Third District—Mrs. G. B. Barefoot ..... Wilmington
Fourth District—Mrs. C. F. Strosnider ..... Goldsboro
Fifth District—Mrs. R. A. Matheson ..... Raeford
Sixth District—Mrs. V. S. Caviness ..... Raleigh
Seventh District—Mrs. F. M. Houser ..... Cherryville
Eighth District—Mrs. W. P. Knight ..... Greensboro
Ninth District—Mrs. C. D. Hedrick ..... Lenoir
Tenth District—Mrs. W. C. Johnson ..... Canton

Standing Committees

Public Relations—Mrs. J. D. Robinson ..... Wallace
Hygeia—Mrs. P. A. Yoder ..... Winston-Salem
Historian—Mrs. Erick Bell ..... Wilson
Scrapbook—Mrs. C. H. McCants ..... Winston-Salem
Jane Todd Crawford—Mrs. R. S. McGeachy ..... Weldon
Research—Mrs. G. M. Cooper ..... Raleigh
Program—Mrs. Frederick R. Taylor ..... High Point
Poster—Mrs. C. D. Thomas ..... Sanatorium
Memorial—Mrs. Isaac H. Manning ..... Chapel Hill

Ladies Entertainment Committee

Mrs. C. D. Thomas, *Chairman*
Mrs. J. S. Denholm
Mrs. F. T. Harper
Mrs. L. B. Skeen
Mrs. P. J. Chester
Mrs. J. S. Milliken
Mrs. W. E. Overcash
Mrs. John Symington
Mrs. R. A. Matheson
Mrs. G. C. Godwin
Mrs. P. P. McCain
Mrs. H. E. Bowman
Mrs. R. L. Felton, Jr.
Mrs. W. C. Mudgett
Mrs. F. L. Owens
Mrs. Greer Stutz

Information for Ladies

1. Register on arrival and receive badge. $1.00 registration fee for all who do not present 1937-38 membership card.
2. Wear badge to all functions and register for all entertainment.
3. Volunteer cars for Tuesday afternoon and Wednesday morning.

MONDAY, May 2

3:00 p.m.—Bridge (Ladies' Card Room).
4:45 p.m.—Tea (Ladies' Card Room).
8:30 p.m.—Keno Party (Pine Room).

TUESDAY, May 3

9:00 a.m.—Opening Session, Medical Society of the State of North Carolina. President's Address, W. M. Johnson, M.D., Winston-Salem.
10:00 a.m.—Auxiliary Executive Board Meeting (Men's Card Room).
11:00 a.m.—Auxiliary Meeting (Men's Card Room).
3:00 p.m.—Drive to Southern Pines (Volunteer Cars).
4:00 p.m.—Tea at Southern Pines Country Club (Favors).
9:00 p.m.—President's Reception and Sixteenth Annual Medical Society Ball (Ballroom).

WEDNESDAY, May 4

9:00 a.m.—Drive to Jug Town (Volunteer Cars).
3:00 p.m.—Theatre Party—Carolina Theatre, Pinehurst (Guest of Carolina Theatre).

TUESDAY, May 3, 11:00 a.m., MEN'S CARD ROOM

Call to Order.....Mrs. W. T. Rainey, *President*
Lord's Prayer
Greetings.....Mrs. W. E. Overcash
Response.....Mrs. K. B. Pace
Memorial Service.....Mrs. Isaac H. Manning

BUSINESS SESSION

Report of Secretary.....Mrs. George W. Mitchell
Report of Treasurer.....Mrs. E. C. Judd
Report of Chairman of Organization.....Mrs. J. R. Terry
Report of Chairman of McCain Bed.....Mrs. J. B. Sidbury
Report of Chairman of Loan Fund.....Mrs. J. A. Keiger
Report of Southern Medical.....Mrs. G. M. Cooper
Greetings from the Medical Society.....Wingate M. Johnson, M.D.
Guest Speaker.
Report of Standing Committees:
- Hygeia.....Mrs. P. A. Yoder
- Historian.....Mrs. Erick Bell
- Scrapbook.....Mrs. C. H. McCants
- Jane Todd Crawford.....Mrs. R. S. McGeachy
- Research.....Mrs. G. M. Cooper
- Program.....Mrs. Frederick R. Taylor
- Poster.....Mrs. C. D. Thomas

President's Report.....Mrs. W. T. Rainey
Report of Courtesy Committee
Report of Nominating Committee } .....Mrs. J. Roy Hege, Chairman
Election of Officers.
Installation of Officers.....Mrs. P. P. McCain, Organizing President
Announcements.....Mrs. J. A. Elliott, Incoming President
Adjournment.

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

Twenty-eighth Annual Session

MONDAY, MAY 2, 1938

President—Dr. M. T. Foster, Fayetteville
Secretary—Dr. A. H. Elliott, Wilmington

PROGRAM

9:00 a.m.—Registration.

9:45 a.m.—Invocation—Rev. W. S. Golden, Carthage.

10:00 a.m.—President's Address—Dr. M. T. Foster.

10:30 a.m.—"Some Facts Concerning Rabies and Suggestions for its Control"—Dr. William Moore, State Veterinarian. Discussion opened by Dr. R. A. Herring.

11:00 a.m.—"County Control Program for Tuberculosis in North Carolina"—Dr. J. S. Denholm and Dr. P. P. McCain. Discussion opened by Dr. S. B. McPheeters.

11:30 a.m.—"The Public Health Aspect of the Sanitation Problem Created by the Touring Public"—J. M. Jarrett, Consultant in Sanitary Engineering, State Board of Health. Discussion opened by Dr. John W. Williams.

12:00 Noon—"Sulfanilamide, its Therapeutic and Toxic Action"—Dr. Jerome S. Harris, Duke University Medical School. Discussion opened by Dr. W. P. Richardson.

Noon Recess

12:30 p.m.—"Contraception as a Public Health Measure"—Dr. Clarence J. Gamble, Boston, Massachusetts. Discussion opened by Dr. J. Allen Whitaker.

3:00 p.m.—"The Report of the Venereal Disease Program in Forsyth County Conducted by the City and County Health Departments, the Urological Group of the Local Medical Profession and Other Part-time Clinicians"—Dr. J. Roy Hege, Director Forsyth-Stokes-Yadkin Health Department. Discussion opened by Dr. J. C. Knox.

3:30 p.m.—"The Serum Treatment of Pneumonia"—Dr. Hubert B. Haywood, Raleigh. Discussion opened by Dr. C. A. Bulla.

4:00 p.m.—"Nursing Service in the Public Health Program"—Miss Clara Ross, Director of Nursing, City Health Department, Charlotte. Discussion opened by Miss Lillian Bayley.

4:30 p.m.—"Coöperation of Local Physicians with Maternity and Infancy Centers Through Health Departments"—Dr. W. R. Parker, Jackson. Discussion opened by Dr. N. Thomas Ennett.

Evening Session

6:30 p.m.—Dinner Meeting. "The Epidemiology of Acute Respiratory Infections."—Dr. Wilson G. Smillie, Professor of Preventive Medicine, Cornell University Medical School.
Old Business.
New Business.
Election of Officers.

TRANSACTIONS
of the
EIGHTY-FIFTH ANNUAL MEETING
of the
MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

PINEHURST, MAY 2, 3, 4, 1938

SESSIONS OF THE HOUSE OF DELEGATES

MONDAY EVENING SESSION

May 2, 1938

The House of Delegates of the Medical Society of the State of North Carolina convened at eighty-thirty o'clock in the Ballroom, The Carolina, Pinehurst, North Carolina, Dr. Wingate M. Johnson, President, presiding.

President Johnson: The House of Delegates will come to order. The first thing on the Order of Business is the roll call.

Secretary-Treasurer Long called the roll, the following being present:

County	*Delegate*
Alamance-Caswell	S. C. Spoon, Burlington
Anson	——— ———
Avery	——— ———
Beaufort	J. C. Tayloe, Washington
Bertie	J. E. Smith, Windsor
Bladen	——— ———
Brunswick	——— ———
Buncombe	H. S. Clark Asheville
	B. O. Edwards, Asheville; G. W. Murphy, Asheville; H. G. Brookshire, Asheville.
Burke	J. W. Vernon, Morganton
Cabarrus	——— ———
Caldwell	C. R. Hedrick, Lenoir
Carteret	K. P. B. Bonner, Morehead City
Catawba	——— ———
Chatham	——— ———
Cherokee	Z. P. Mitchell, Murphy
Chowan-Perquimans	——— ———
Cleveland	W. J. Lackay, Fallston

[1]

County	*Delegate*
Columbus	Thurston FormyDuval, Whiteville
Craven	——— ———
Cumberland	J. F. Highsmith, Fayetteville
Davidson	J. R. Terry, Lexington
Davie	——— ———
Duplin	——— ———
Durham-Orange	W. M. Coppridge, Durham; C. E. Gardner, Durham; T. C. Kerns, Durham; W. R. Stanford, Durham.
Edgecombe-Nash	J. G. Raby, Tarboro; A. L. Daughtridge, Rocky Mount
Forsyth	S. W. Hurdle, Winston-Salem G. C. Cooke, Winston-Salem; S. W. Rankin, Winston-Salem; B. N. Jones, Winston-Salem.
Franklin	——— ———
Gaston	L. N. Glenn, Gastonia F. M. Houser, Cherryville.
Gates	T. L. Carter, Gatesville
Granville	——— ———
Greene	——— ———
Guilford	I. T. Mann, High Point Rigdon Dees, Greensboro.
Halifax	M. S. Broun, Roanoke Rapids
Harnett	C. L. Corbett, Dunn
Haywood	V. H. Duckett, Canton
Henderson	——— ———
Hertford	J. Gaddy Matheson, Ahoskie
Hoke	R. L. Murray, Raeford
Hyde	——— ———
Iredell-Alexander	J. W. Davis, Statesville
Jackson	——— ———
Johnston	T. G. Upchurch, Smithfield
Jones	——— ———
Lee	Waylon Blue, Jonesboro
Lenoir	I. M. Hardy, Kinston
Lincoln	W. G. Bandy, Lincolnton
Macon-Clay	——— ———
Madison	——— ———
Martin-Washington-Tyrrell	J. S. Rhodes, Williamston
McDowell	——— ———
Mecklenburg	Elias Faison, Charlotte; T. C. Bost, Charlotte; C. B. Squires, Charlotte.
Mitchell	C. A. Peterson, Spruce Pine
Montgomery	——— ———
Moore	W. C. Mudgitt, Southern Pines
New Hanover	E. S. Bulluck, Wilmington W. Houston Moore, Wilmington.
Northampton	J. W. Parker, Seaboard
Onslow	——— ———
Pamlico	D. A. Dees, Bayboro

County	*Delegate*
Pasquotank-Camden-Currituck-Dare	H. D. Walker, Elizabeth City
Pender	——— ———
Person	——— ———
Pitt	J. S. Liverman, Winterville
Polk	——— ———
Randolph	J. R. Johnson, Ramseur
Richmond	W. D. James, Hamlet
Robeson	R. D. McMillan, Red Springs
Rockingham	A. F. Tuttle, Spray
Rowan	H. L. Monk, Salisbury
Rutherford	——— ———
Sampson	W. P. Starling, Roseboro
Scotland	E. A. Livingston, Gibson
Stanly	A. F. Lapsley, Badin
Stokes	——— ———
Surry-Yadkin	E. C. Ashby, Mt. Airy
Swain	——— ———
Transylvania	——— ———
Union	——— ———
Vance	H. A. Newell, Henderson
Wake	Rupert Weathers, Knightdale
B. J. Lawrence, Raleigh; M. D. Hill, Raleigh; L. C. Liles, Raleigh.	
Warren	——— ———
Watauga-Ashe	——— ———
Wayne	C. F. Strosnider, Goldsboro
Wilkes-Allegheny	J. H. McNeil, North Wilkesboro
Wilson	Geo. W. Mitchell, Wilson
Yancey	——— ———

Secretary-Treasurer Long: Mr. President, there being sixty-nine delegates present, which constitutes a quorum, we can proceed with the business of the Society.

President Johnson then presented his Report, making the following interpolation, preceding the words, "This law has been effective," on page 2: I might say that our technician at home has been good enough to try out the test for us. He said it is quite easily done. He found that by dissolving one part of alcohol in ten parts of blood, it gave a very accurate test. It can be easily done by any experienced technician . . . (Applause).

PRESIDENT'S REPORT TO THE HOUSE OF DELEGATES

In giving an account of my stewardship during the past year, I want first of all to voice my heartfelt thanks for the loyal coöperation shown by the entire membership of the North Carolina State Medical Society—not only its official family, but those in the ranks as well. The great honor of being your president is esteemed more than I can say; but the

confidence implied is appreciated still more. The many messages of encouragement, both written and verbal, have given me courage to face the problems that have arisen and strength to undertake the tasks that go with the office. Your whole-hearted support has made the year one to be cherished in memory so long as I live.

Especially do I wish to record my thanks to our secretary, Dr. Tom Long. Taking up his duties without previous preparation, he had a tremendous task to do in transferring the office records from Southern Pines to Roanoke Rapids. How he did this so efficiently, found time to visit every district in the state, looked after every detail of the office, and kept up a large practice, I don't know; but that he did it all well, I do know. No man need wish for a more congenial companion to travel with, nor a more willing yokefellow, nor a more loyal friend.

Another debt of gratitude I wish publicly to acknowledge is to my associates, Bennette Pool and Elbert MacMillan, who cheerfully abode by the stuff and looked after my patients while I roamed all over the state. Without their never failing and always willing help I could not have attended nearly so many meetings.

The old adage, "Death loves a shining mark," was verified this year. Very soon after our Winston-Salem meeting Dr. Coite Sherrill, Chairman of the Section on Practice of Medicine, was stricken suddenly and fatally. Soon afterward, Dr. R. H. Hardin, who was a member of the Committee on Post-Graduate Study, was also quickly taken from us. Dr. J. R. Paddison, of Kernersville, was appointed to replace Dr. Sherrill as head of the Section on Practice, and Dr. W. H. Smith, of Goldsboro, to take Dr. Hardin's place on the Post-Graduate Study Committee. The tragic death of Dr. Stephen W. Davis, who was to have presented a paper to the Section on Practice, was a great shock. The Homegoing of Dr. L. B. McBrayer, Honorary Secretary for Life, was not unexpected, but nevertheless leaves a great void in our ranks. It is hard to visualize a meeting of the State Society without him.

An honest attempt was made to visit every district at least once during the year, and only three were missed. Through an oversight, which I am sure was not intentional, I was not informed of one of these, and got the program of another only the day before the meeting—too late to arrange to attend. The Third District was missed because of the very serious illness of a near relative, but the society was well represented by the President-elect and the secretary. The meetings attended were all marked by papers and discussions of a high order. Before the year was half over, I began to realize that the job of being president offers a wonderful opportunity for a continuous post-graduate course. If I am not a better doctor than a year ago, it is not the fault of the doctors of North Carolina. They have done their best to educate me.

It can truly be said, I believe, that the spirit of the society is one of peace and good will. So far as can be determined, there is no discord in

our ranks. The Executive Committee was called together only once, and that meeting was harmonious. The Society is in good financial health, with a satisfactory balance in the treasury. There is no reason to agitate the question of dues. With a legislative session facing us next year, we dare not risk reducing our war chest; but we do not need to consider a raise of dues. We have set a good exampe to our political masters by living within our budget and keeping our expenses down to a minimum.

We have a membership of 1,648 members, either paid-up or honorary, out of approximately 2,485 practicing physicians in North Carolina. Included in the number of practicing physicians, however, is about 200 Negro physicians. This gives us an enrollment of about 72 per cent. Let us hope that the coming year will find the other 28 per cent safely within the fold. Organized medicine needs them and they still more need organized medicine. By way of encouraging attendance upon our meetings, these welcome words are quoted from a letter Dr. Long wrote me on September 6, 1937: "I am just in receipt of a letter from A. J. Maxwell, Commissioner of Revenue, advising me that his department is making a ruling allowing physicians in the state to deduct from their income tax returns the actual expenses of attendance of meetings in connection with their profession."

One of the most worth-while activities of our Society is the variety of post-graduate instruction offered our members, besides the county and district meetings. The annual symposium offered by Duke each October attracts large numbers. This spring Duke rendered the medical profession of the state another most valuable service in using its laboratory to train technicians to type pneumococci and estimate the sulphanilamid concentration of the blood. This was followed by an excellent symposium for practitioners on the diagnosis and treatment of the pneumonias. The Cancer Clinic at Wake Forest in April assembled some of the best talent in the Nation for its teaching staff.

Our own Committee on Post-Graduate Study arranged a series of lectures sponsored by the Extension Department of the University of North Carolina, and given in Raleigh, Charlotte, and the Piedmont triangle, Greensboro, High Point, and Winston-Salem. At least 600 men took advantage of these lectures, and, so far as I can learn, not a single man was disappointed in a single lecture. It is to be hoped that these extension courses will prove even more popular next year. It was a distinct compliment both to our secretary and to our state that Dr. Long was asked to read a paper on Post-Graduate Study in North Carolina to the annual secretaries' meeting held in Chicago last November.

Before leaving the subject of post-graduate study I would like to mention a plan used in the Winston-Salem City Memorial Hospital. By having every member of the visiting staff lead one conference a year, it was possible to offer a conference almost every week with the interne

staff. While primarily for the benefit of the internes and resident physicians, they were made open to the members of the visiting staff and to all doctors in the community, including Negroes. The marked enthusiasm shown by those taking advantage of these meetings makes us feel that they are well worth while. They are independent of the bi-weekly clinico-pathological conferences conducted by our pathologist.

It is necessary only to mention the work done by the joint committee on pneumonia control from the medical society and the State Board of Health. Without intending to reflect upon any other campaign of popular education, it seems to me that this committee went about its task in the logical way. A sufficient number of technicians were trained to type pneumococci, the doctors themselves were given a post-graduate course in treating the disease, and distributing centers are to be arranged before any attempt is made to inform the public.

Speaking of informing the public, there is still much to be done in making people aware of the danger of neglecting a pain in the abdomen, and especially of giving laxatives. I am glad that Dr. McKnight is reading a paper on appendicitis as a public health problem before the Section on Public Health and Education. Despite the wealth of literature on the subject, there are still far too many ruptured appendices in the land.

The question of a four-year medical school is still unsettled. A committee from our society has been working in coöperation with the commission appointed by the governor to study the advisability of establishing such a school. This committee has done an immense amount of work and will report later.

Dr. Manning may well be proud of his brain-child, the Hospital Savings Association, which was one of the first plans for group hospitalization to be approved by the American Hospital Association. It is quite possible that the success of this plan has had much to do with lessening the clamor for socialized medicine in this state.

Socialized medicine, like Banquo's ghost, will not stay down. Several things have happened to cause discussion in medical circles, and to lead the public to believe our profession is more divided than it is. The so-called "Declaration of Independence" with its 430 signers, mostly teachers and health officials, contained much that we all could subscribe to; but the part to which most of us objected was the appeal for the government to subsidize medical schools, hospitals, and research laboratories. Apparently the principle that "He who pays the piper calls the tune" was forgotten. A counter-blast under the name of "A Declaration of Convictions" was quietly circulated by a group of California doctors among the 2,046 surviving contributors to the American Foundation report. More than 800 signatures were quickly secured. Fortunately this was not given to the lay press, but was turned over to the Board of Trustees of the A. M. A.

In his presidential address to the College of Physicians a month ago, Dr. James H. Means, one of the 430, took advantage of his temporary elevation to launch an attack upon the American Medical Association. This aroused so much resentment among the members present that a petition was circulated and presented to the Board of Regents, asking that they take action publicly to correct this impression, and Dr. Means himself issued a statement denying that he was advocating a revolt. Unfortunately, such a staid and usually fair-minded paper as the *New York Times* spread the original speech of Dr. Means on the front page, but so hid his denial and the statement of the Board of Regents that to find them was like hunting Easter eggs.

Much capital is being made of the so-called National Health Survey lately completed by the Public Health Service in collaboration with the W.P.A., which shows, first, that there is more sickness among the families on relief and with incomes of less than $1,000 than in the upper income group; and, second, that those in the lower income group had fewer doctors' visits than the economic royalists with more than $2,000 annual income. In the words of the *Baltimore Sun:* "The figures published are far from impressive. . . . It is hard to find any support for socialized medicine in this survey. The advocates of that new panacea, in some cases, are undoubtedly earnest and honest men, but in plenty of other cases they are only fools who have smoked the Moscow marihuana."

While the overwhelming majority of medical men who have given the matter any thought are opposed to compulsory health insurance, the feeling grows that the load of caring for the indigent is too great for the doctors to carry without help. Just what the solution is remains to be seen. The American Medical Association has at last recognized that some concession must be made to this feeling and has appointed a committee to help formulate a plan or plans for solving it. They ask that every state help in the search. My predecessor, Dr. Strosnider, appointed a committee for the purpose, which doubtless will be continued. Meanwhile we private practitioners can do much to counteract the paid propaganda for compulsory health insurance by letting our patients know what they might expect from it.

Perhaps the most pressing need of our state now, from the public health standpoint, is more adequate facilities for the mentally diseased. All our institutions for these unfortunates are greatly overcrowded, and our jails are being forced to harbor many of them. Since it costs at least fifty per cent more to board one in jail than in an asylum, there is no economy in the practice. North Carolina is perilously close to the bottom of the states in her per capita appropriations to the mentally sick, and in the ratio between patients and doctors, nurses, and attendants. Let us use our influence to improve her position.

A problem we should face squarely and without undue sentiment is whether we should continue to publish our time-honored Transactions, or adopt the more modern state medical journal. At present North Carolina is the only state that retains the single volume annual Transactions. There are arguments on both sides, of course, which I do not propose to enter into here. Many men have said that the most valuable feature of the present Transactions is the roster of members and their addresses. This could be furnished once a year at small cost in a state journal.

While there are entirely too many laws on our books now, I feel the need of two more so strongly that I am recommending we urge their passage at the next meeting of the legislature. The first has already been adopted by at least nine other states, and should aid materially in the campaign against syphilis. It is simply that every applicant for a marriage license, whether male or female, be required to submit with an application for a marriage license a negative standard serological report from a reputable laboratory. This would be stamping out syphilis at the source.

The second law I would urge is that every individual arrested and charged with drunkenness shall be required (or allowed) to have a sample of blood taken by a physician or technician and sent to a laboratory to be examined for its alcohol content. An alcohol concentration of more than .15 per cent, or possibly .1 per cent means intoxication. If one objects to the test, that might be taken as equivalent to pleading guilty. I am told that the technique is not difficult to master, and that only .2 c.c. of blood is needed. This could easily be obtained from the finger tip or lobe of the ear. The first article in the *Journal* of the A.M.A. for March 12, 1938, discusses this question quite well. It shows that the blood test is far more accurate than the method of testing the breath or urine, and that there is no valid legal objection.

This law has been effective in Sweden and a few other European countries for some time. Why should not North Carolina take the lead in the United States? It is hardly necessary to argue the advantage of making such an important decision from a scientific impersonal laboratory test, rather than from a layman's guess. It would exonerate the victim of insulin shock and of political persecution, and incriminate the guilty, even though possessed of political pull.

A number of other important medical groups, notably the American Association of Physicians, have the first week of May fixed as a date for their annual meeting. So many of our members have expressed the wish that we might avoid this conflict that it seems we should listen to them. Last spring Dr. Long and I did our best to secure the last week in April, but the management of this hotel could not let us have it. As the place of the meeting had already been fixed at Pinehurst, we had to let the date stand for this year's meeting.

The suggestion has been offered, which seems quite sensible, that the president-elect should have a place on the program. He has had a year to think over his plans for the coming year, and might with profit outline them to the society. Furthermore, the knowledge that this would be expected of him would be a stimulus to use his year of preparation to formulate a program.

In closing, I wish to offer the following recommendations:

1. That our post-graduate work be continued and still further extended.

2. That a committee be appointed to study the advisability of substituting a state medical journal for the Transactions. This commitee shall, if possible, offer a definite recommendation for consideration by the Society at its annual meeting in 1939.

3. That our committee on medical economics (or social security) be continued and requested to act in coöperation with the committee from the A.M.A.

4. That the society back up the State Board of Health in its campaign against syphilis, and to that end recommend to the next legislature the passage of a law requiring a negative serological report from a reputable laboratory before a marriage license can be issued.

5. That we also recommend the passage of a law requiring (or allowing) any individual charged with drunkenness to have the alcohol content of his blood tested as a measure of intoxication.

6. That the time of our annual session be changed, if possible, to some other time than the first week in May.

7. That the president-elect be given a place on the program, either in the first meeting of the House of Delegates or in the first General Session, so that he may outline his policies for the coming year.

President Johnson: The next thing in order will be the Secretary's report. Then both of these reports can be considered together.

Secretary-Treasurer Long: Mr. President, Gentlemen of the House of Delegates: I took over the office of Secretary-Treasurer immediately after the Annual Meeting last year.

A complete audit was made as of May 6 and a second audit was made as of December 31, 1937. A complete summary of the audits is attached hereto and will appear in the Transactions.

I shall take time here only to present the totals which I believe will be of interest to you.

The budget estimate of receipts was $9,600.00. Actually, $14,551.40 was received during the year. The budget estimate for expenditures was $12,650.00, whereas only $12,015.29 was actually spent, this amount, of course, including the extra expenditure necessary for office equipment. The cash balance on December 31 was $6,986.03, of which sum $3,000

was represented by a certificate of deposit and the balance subject to check.

When I took over the office, the Medical Society of the State of North Carolina owned no office equipment except a safe, which was so large and unwieldy that it could not be gotten into the office and had never been used. When buying other equipment I traded in the safe for a lighter, fireproof one. The Executive Committee allotted $1,600.00 to buy equipment, of which amount we spent only $1,388.57. The Society now owns equipment for a really first-class office, including a Dictaphone, typewriter, adding machine, mimeograph, Protectograph, desk, chair, and safe. Of course, this expenditure will not be necessary again for a period of probably twenty years.

At the 1937 meeting in Winston-Salem the House of Delegates passed a resolution appropriating $400 to be used for the employment of counsel to secure a ruling from Mr. Maxwell which would allow physicians to deduct from their income tax the expenses incident to attending scientific meetings. This ruling was obtained by the Secretary without employment of counsel, thus saving the Society that amount.

During the year I have traveled 8,024 miles attending meetings in almost every district in our Society. I estimate that I have contacted approximately 1,000 doctors in the state through these various meetings. It has been particularly gratifying to note the quality of the papers read and the spirit of fellowship existing at these meetings throughout the state.

Even though the period from May through December is the least busy season so far as this office is concerned, we received about 2,000 letters during this period. In addition to taking care of this regular daily correspondence about 2,000 mimeographed letters were mailed out during these months.

At the end of the year we had 266 honorary members and 1,384 active members, making a total membership of 1,648, with 102 physicians who joined for the first time in 1937.

There has been so much discussion among the physicians of the state regarding the Transactions and a medical journal that I have gone into the matter rather thoroughly. North Carolina is the only state now publishing Transactions. After pretty wide contact with the majority of physicians in the state, I am of the opinion that a state medical journal is needed and that the Transactions should contain only a record of the meetings of the House of Delegates and of the Executive Committee, and a complete roster of the membership of the Society. I am recommending that this plan be considered. (Applause.)

President Johnson: Gentlemen, you have before you the reports of the President and of the Secretary. What will you do with them?

Dr. Rigdon Dees (Guilford): I move that both of these reports be accepted. In making this motion, I want to testify to the truth of those reports, because at most all the meetings I attended I saw Doctor Long and Dr. Johnson present. I ate a good many meals with those boys, at various scientific meetings. In some of these meetings they entered into the program, in the discussion, and in some instances they read scientific papers.

I think those are wonderful reports, and I think as time goes along they will act as a memorial to them and that we will look upon their administration with a great deal of pleasure and happiness.

The motion was duly seconded.

President Johnson: Is there any discussion of this motion? It is a little bit embarrassing to put this motion myself. Though Doctor Long and I made the same recommendation, I can assure you there was no collaboration at all. I don't want anyone to think we were playing politics on the Society there.

Dr. Rigdon Dees (Guilford): Gentlemen, you have heard the motion, which has been seconded. All in favor, let it be known by saying "Aye." There are no dissenting votes. It is unanimously carried. (Laughter and applause.)

President Johnson: I think at this time we will take a recess of about fifteen minutes and let each district get together and select its member of the Nominating Committee. Then we will reconvene and take up the reports of the committees.

Dr. Paul H. Ringer (Buncombe): Before we recess, might I make a recommendation?

I think that recommendation of Dr. Long's for the establishment of a state medical journal is very important, and I would like to move that the President appoint a committee of not more than five to consider this matter and to report upon it at the meeting next year.

President Johnson: That is the incoming President?

Dr. Ringer: No, I would like to leave it to you. I make such a motion: that the President appoint a committee of not less than five to consider the question of establishing a state medical journal for the Medical Society of the State of North Carolina.

Delegate: I would like to amend that, that the incoming President and the present President appoint that committee.

Dr. Ringer: I will accept that amendment.

Delegate: I would like to offer an amendment that we put Dr. Northington on as one of the members of that committee.

Dr. Ringer: I will accept that, too.

President Johnson: You have heard the motion as amended. Is it seconded?

The motion was duly seconded.

President Johnson: Is there any further discussion of that motion? If not, all those in favor of Dr. Ringer's motion as amended that the incoming President and the outgoing President together shall appoint a committee of five, including Dr. Northington as one member of that committee, to consider the advisability of establishing a state medical journal and report to the meeting of the House of Delegates next year signify by saying:

Dr. Claude B. Williams (Pasquotank-Camden-Currituck-Dare): May I inquire if the purpose of that recommendation is that that will take the place of the Transactions?

President Johnson: This committee is to study the question and offer recommendations.

Dr. Williams: I was on the Council a little bit back and always recommended and advocated that when Dr. Ringer was President. Our burden is the Transactions. That is what costs us money. I did not feel—I never got very far with my feelings in the matter—that the Transactions should be done away with, but the Transactions, if you will examine them, contain on several pages the names and addresses of the members of the Medical Society. It is very nice to have your name in a book, but I think if it is in the book once that is enough.

In the Transactions, if you will notice, a great deal of space is taken up with the names and addresses of the different members, and I always felt that that part of the Transactions might be done away with and that we might have something like this journal that you suggest. I am heartily in favor of that proposition.

Dr. Ringer: Mr. President, oddly enough, I take the opposite view to Dr. Williams.

In making my motion to appoint a committee to consider the establishment of a state medical journal, my idea was that the Transactions in the future would consist more of the statistical material for the Society rather than the papers read before it. It seems to me that for purposes of reference the statistical material is the important thing and that the papers could very well be published in the state medical journal.

So my idea was to have the state medical journal, primarily, to publish the papers that are read before the Society and to give matters of general information to the members of the Society. It was not my thought that that would by any means take the place of the statistical material that we now have and which could very well be published in pamphlet form and at a very small cost.

President Johnson: As I understand it will be the function of the committee to recommend.

There were calls for the question.

President Johnson: All those in favor of the motion make it known by saying "Aye"; opposed, "No." The "Ayes" have it, motion is carried.

Dr. Sidbury and I will collaborate on that.

Each district will now get together and select its member for the Nominating Committee and report your nominations to the Secretary.

We will recess for about fifteen minutes.

A brief recess was taken.

Secretary-Treasurer Long: The Nominating Committee is composed of the following men:

First District, Dr. H. D. Walker.
Second District, Dr. John Cotten Tayloe.
Third District, Dr. W. H. Moore.
Fourth District, Dr. George W. Mitchell.
Fifth District, Dr. J. F. Highsmith.
Sixth District, Dr. S. C. Spoon.
Seventh District, Dr. John Q. Myers.
Eighth District, Dr. Frank L. Sharpe.
Ninth District, Dr. C. R. Hedrick.
Tenth District, Dr. G. W. Murphy.

President Johnson: Gentlemen, we had one meeting of the Executive Committee last year. It is usually customary to dispense with the reading of the minutes. There is nothing controversial.

Dr. Paul H. Ringer (Buncombe County): I move we dispense with the reading of the minutes.

Dr. John Q. Myers (Mecklenburg County): I second the motion.

The motion was put to a vote and carried.

MINUTES EXECUTIVE COMMITTEE
MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Sir Walter Hotel, Raleigh

July 13, 1937

The meeting of the Executive Committee held at the Sir Walter Hotel, Raleigh, Tuesday, July 13, 1937, was called to order by President Johnson at 11:00 a.m.

The following were present:

President.....Wingate M. Johnson, M.D.
President-elect.....J. Buren Sidbury, M.D.
First Vice President.....R. B. McKnight, M.D.

Second Vice President.....J. F. Abel, M.D.
Secretary-Treasurer.....T. W. M. Long, M.D.
Honorary Secretary for Life.....L. B. McBrayer, M.D.

COUNCILORS

First District.....H. D. Walker, M.D.
Second District.....Paul F. Whitaker, M.D.
Third District.....W. Houston Moore, M.D.
Fourth District.....Geo. W. Mitchell, M.D.
Fifth District.....W. D. James, M.D.
Sixth District.....George Carrington, M.D.
Eighth District.....R. C. Mitchell, M.D.
Ninth District.....J. R. Terry, M.D.
Tenth District.....Julian Moore, M.D.
Chairman Public Relations Committee.....D. W. Holt, M.D.
Chairman Finance Committee.....V. P. Peery, M.D.
Delegate to A.M.A.....John Q. Myers, M.D.
State Board of Health.....Carl V. Reynolds

President Johnson: This meeting was called primarily to consider the resolutions from the State of Maryland about Social Security propositions as set forth in Senator J. Hamilton Lewis' address before the House of Delegates of the A.M.A. Before we start on a discussion of this matter, I shall ask Dr. John Q. Myers, the other delegate to the A.M.A., to give us a brief report of the meeting of the House of Delegates.

Dr. Myers: I have attended many meetings of the A.M.A., but this particular meeting is the most interesting one I have ever attended. Out of a possible 174 delegates, 168 were present, and they were there for business and attended every meeting. Everyone felt that something important was to be done, but nobody seemed to know just where we were drifting. The President gave us a very interesting and instructive address. Then the fireworks started. The request for Senator Lewis to appear before the House of Delegates came early. After much discussion the House of Delegates decided to allow him to appear on Thursday. Senator Lewis said that he was not exactly representing the President, but he was in the midst of friends and was asking advice as to how to proceed. Most of the meeting outside of the routine business affairs pointed towards Socialized Medicine, group inroads, hospitalization, insurance, etc.—any way to slip in a wedge to bring in socialized medicine.

President Johnson: The June 21 issue of *Time* gave us a little inside information about the New York Resolutions, which were presented to the A.M.A. It shows that they were thought up at a conference with President Roosevelt. I am sure that there were few persons at the New York meeting who knew that Dr. Kopetzky had been in conference with

the President before the resolutions were prepared. Being a good salesman, he sold the New York Society on them. Their reception at the A.M.A. is very good evidence that his views are not favored by the majority of doctors in the United States.

After coming back from the A.M.A., I asked Dr. West if he thought there would be another meeting of the House of Delegates of the A.M.A. He replied in official confidence—it's all in the family, so I'll pass it on to you—that it would depend on the turn that events take in Washington. Upon investigation no one in Washington would admit that they knew anything about what Lewis said. Dr. West is fully convinced, however, that the movement is being worked on but worked on secretly.

My own feeling is that Lewis was sent as a sort of trial balloon, as a reporter of the President, who certainly has a respect for organized medicine, even though Lewis may not have presented his (the President's) plan. The idea of the Administration may have been to scare the doctors half to death so that when they came to deal with us we would be glad to accept almost anything they would offer. Since the meeting at Atlantic City, this has become the topic of conversation everywhere. We have had resolutions sent from other states with the request that we consider them and act ourselves. I shall ask Secretary Long to read the resolutions from Florida and Iowa. It will not be necessary to read the Maryland resolutions since each of you has already had a copy of these prior to the meeting.

Secretary Long read the resolutions as follows:

FLORIDA RESOLUTIONS

Whereas, the report submitted by the Delegates of the Florida Medical Association to the Annual session of the House of Delegates of the American Medical Association at Atlantic City, June 7 to 10, 1937, indicates that a plan is being contemplated by the Federal, Executive, Administrative, and Congressional authorities to place the practice of medicine in the United States as it involves the medical care of indigent persons, under Federal Governmental control, and

Whereas, the Executive Committee representing the House of Delegates of the Florida Medical Association hereby affirms its willingness to coöperate at all times with the proper authorities in order to secure adequate medical care for all indigent persons, yet at the same time is convinced that such care is distinctly a community responsibility and is properly a function of the local governmental unit and local medical profession, and

Whereas, Federal supervision of the medical care of the indigent without local control by the component medical units of the various State Medical Societies will destroy those principles which maintain for the

public the highest quality of medical service and the possibility of improvement in this service.

Therefore, Be it Resolved, That the Florida Medical Association in justice to the medical profession of the state, hereby records its unequivocal opposition to and its unwillingness to coöperate in any plan that involves Federal supervision and control of medical practice in the United States and will combat this with every means at its command, and

Be it Further Resolved, That a copy of these resolutions be forwarded to the secretaries of all state medical associations with the recommendation that similar resolutions be adopted by such associations, and

Be it Further Resolved, That copies of these resolutions be forwarded to all of our congressional representatives in Washington.

IOWA RESOLUTIONS

The address of Senator J. Hamilton Lewis before the 1937 meeting of the A.M.A. has aroused nation-wide interest and comment, particularly in medical circles. In his talk, Senator Lewis outlined proposed pending amendments to the Social Security Act which vitally affect the practice of medicine, and the welfare of members of the medical profession and the general public as well.

After a somewhat detailed discussion of this speech, the Executive Council adopted the following resolutions:

Whereas, in an address delivered on June 10, 1937, before the House of Delegates of the American Medical Association at Atlantic City, New Jersey, the Hon. J. Hamilton Lewis, United States Senator from Illinois, stated that there were now pending proposed amendments to the Social Security Act whereby all doctors would be subjected to examinations by a Federal board and obligated to procure a license from the Federal Government before being permitted to engage in practice and by virtue of provisions of proposed laws would be obliged to render medical service at any time to anyone, regardless of ability of such person to pay for such services, as Federal officers who would be compensated through the medium of agencies of the social service and subject to the judgment of such agencies as to whether the fees, methods of payment and quantity and quality of the treatment were fair or fraudulent; and

Whereas, it is the understanding of the Executive Council of the Iowa State Medical Society from such address that such proposed legislation amounts to the regimentation of the medical profession under the control and domination of political agencies; and

Whereas, it is the sense of the Executive Council of the Iowa State Medical Society that the results of such legislation would seriously impair the ability of individual doctors through the exercise of individual initiative to perform the best service to the sick and afflicted;

Now, Therefore, Be it Resolved, That the Executive Council of the Iowa State Medical Society does vigorously protest and oppose the enactment and enforcement of any such legislation as referred to in the said address of Senator Lewis.

Be it Further Resolved, That a copy of this resolution be sent to the Board of Trustees of the American Medical Association, to each of the members of the Iowa Delegation in the Congress of the United States, and to the secretary of every county medical society in Iowa.

President Johnson: Gentlemen, in view of these resolutions, I felt that we should take some action upon similar lines. I called Dr. Holt, Chairman of the Public Relations Committee, to draft a tentative set of resolutions in order to save us time here. After these are read, we will discuss them and if adopted we want it to represent the real honest opinion of the Executive Committee, so if you desire any changes made, let us know.

Dr. Holt (reading resolutions): At the Atlantic City meeting of the House of Delegates of the A.M.A. in June 1937, Senator J. Hamilton Lewis appeared at his own request and delivered an address which was published in the *Journal* of the A.M.A. of June 26. In this address he informed the House that every doctor in the United States would shortly be forced to practice "as an officer of the Federal Government" and "be placed in the position of complete obedience to whatever the law may enforce." Then he continued, "I want that poor, that afflicted, that suddenly injured, having no funds, to have the right to summon any doctor all around him, however high elevated, without regard to what his elevation is, the quickest, the nearest to him for service." (Apparently nearness and speed are more to be considered than ability.) The doctor so summoned would have the right to send the patient to any hospital of any kind immediately; then would send his bill "at once to the agency where this doctor serves who represents the social service."

The Executive Committee of the Medical Society of the State of North Carolina—speaking for the entire membership—wishes to protest against the views expressed by Senator Lewis. We particularly object to the Communistic idea that the rights of the individual are entirely subservient to the state. We deplore the statement that the sacred relationship between doctor and patient is to be destroyed, for upon it rests the very foundation of medical art at its highest. We feel that the proposed scheme as outlined by Senator Lewis would immeasurably retard the progress of American medicine, and that it is a treasonable betrayal of the principles of democracy.

We would like to call attention to an article in *Harper's Magazine* for July, "Killing Old Age Security With Kindness." Although written by Abraham Epstein, who was the author of the compulsory health insurance bill introduced by Senator Capper, the article shows plainly the ghastly results that have followed the passage of the Social Security Act two years ago. The story would be infinitely worse if the practice of medicine were included.

The doctors of North Carolina are always ready and willing to do their part in caring for the underprivileged and indigent, and are willing to coöperate with the state and local authorities in rendering such service; but we strenuously protest against being forced to become "officers of the Federal Government."

We recognize the great responsibility that has been placed upon the Board of Trustees of the A.M.A., and wish to express our sympathy for them in bearing this burden, and our confidence in their good judgment. Believing, however, that they would appreciate expressions of opinion from the various states of the Union, and feeling as strongly as we do about the matter, we respectfully offer the following suggestions for their consideration:

1. That they as soon as possible repudiate the relationship of the government to the physician and patient envisaged in Senator Lewis' address;

2. That they call to the attention of the people of the United States the danger that threatens their freedom as citizens and individuals;

3. That they refuse to assume any share or responsibility in the introduction of such a scheme;

4. That, on the contrary, they enlist the active and vigorous opposition of the entire medical profession against it.

President Johnson: This resolution is before you for discussion.

Dr. Julian Moore: Personally, I feel that the Florida resolutions express what most of us feel about the Federal control of medicine. We would all like to see more adequate care of the indigent locally, but not through Federal control.

Dr. McBrayer: Suppose the Federal government should put up so much money to care for the indigent. Is that satisfactory as long as it is handled through local—state or county government?

Dr. Mitchell: I do not believe it is the business of the Federal government to care for anybody. Let it all be handled through the local governments.

Secretary Long: Buncombe County may take care of its indigent but Halifax may not.

Dr. Mitchell: Government control is coming. If it becomes the duty of the Federal government to take care of indigent sick, they will have the right to license us.

Dr. Carrington: If you say that everybody in every county should have the same medical aid, then why not say that everybody has a right to the same kind of house, the same kind of car, etc.

Dr. Houston Moore: We are willing to accept the government in the control and prevention of diseases which affect the public health, but the government ought to let treatment alone.

Dr. Reynolds: I have thought of this for a long time. Senator Lewis presented to you an ultimatum. I do not believe that this entire responsibility should be placed on the local community. The U. S. Government has assumed its responsibilities; the state has begun to assume her responsibility and I believe rightly so. The county is the slowest to assume the responsibility. I believe that we should divorce preventive medicine from the practice of medicine and I am bitterly opposed to state medicine or contract practice of any kind. A great many doctors are now under contract practice—public health, railroad doctors, etc. We have gone along for 15 or 20 years anticipating this. I believe the resolutions are good as far as they go. We can't go on sitting here and just tell the people that we are bitterly opposed to Federal control of medicine without giving some definite plan to work on. We can't go on as we have been going. Now we have the opportunity to direct our own affairs and it is up to us to do it.

The time is coming when the Federal Government will take care of relief work in North Carolina. In the Health Department we try to get the counties to accept their part of the responsibility, but the County Commissioners say that they can't add the burden of five cents to have organized health work. We do not believe the government is going to stand for that long.

If the government desires to assume additional responsibility in treating indigents, when the money comes into the state let it be a state fund and let us use it as we see fit. We get about $38,000.00 for crippled, blind, etc. We select a committee of two or three and make them responsible for employing specialists to do the work. And they are doing a nice job, too. Now these doctors are making about $28,000.00 where formerly they were getting nothing for that work. It seems to me that we should add to that some means of accepting Federal funds to be controlled by the state. Just to say we are opposed to Federal control without saying what we would be in favor of will force exactly what we are fighting.

Dr. George Mitchell: Here are a few facts I want to present. The present administration is centered around one personality—Roosevelt.

The first act of his administration was to close every bank and when he opened them they were opened by Federal examination. Now he is doing the same thing to the Supreme Court. He has extended us more courtesy than any other group. Lewis' address means, "Gentlemen, I am warning you." The newspapers know that we have been invited to submit a plan by which a man who does not now receive fit medical service may receive it. That is impossible under former plans. President Roosevelt has defied his family tradition by taking up for the poor and Harry Hopkins has the same idea as a result of his religious training. We are going to have the indigent given medical care by the Federal government. I do not like it but I am telling you it is coming. If we pass resolutions similar to these, we will only be tossing the ball back to Mr. Roosevelt and saying, "We are giving you the chance to do whatever you want." The only way in which we can get any consideration is for us to submit a concrete plan whether it is what we want to do or not. We must make a gesture of some sort towards accepting responsibility. We must make a concrete proposal that will at least entertain their interest.

Dr. Julian Moore: Doctors are not being paid adequately for public health work at present.

Dr. Reynolds: They are getting $28,000.00 more than they were before. Until recently they were getting nothing. This is a stepping stone. If we can show what we have accomplished so far they will give us more money.

Dr. Julian Moore: Do you favor Federal control?

Dr. Reynolds: Federal money, but not control.

Dr. McBrayer: I asked men doing work for crippled children whether or not they were satisfied with the work. All of them said "Yes."

Dr. Abel: Most of us came here with a half-formed opinion. Each fellow has put forth a good idea. My idea is that most of us are old-fashioned prejudiced dyed-in-the-wool Democrats. Our democracy is based on the basic units of town, county, state, and United States. We should not lose sight of the fact that each person is a citizen of the United States and owes the United States something and it owes him something. The medical profession, I believe, can keep both feet on the ground. We have got to make our resolutions to fit something now. We, too, should have a remedy, or suggest a remedy to solve our problem. I propose local control.

Dr. Terry moved that a committee be appointed to draw up resolutions based on the opinions expressed in the discussion. Dr. Whitaker seconded the motion and the motion passed unanimously.

Dr. Houston Moore: I am not so certain that the government is trying to control the medical profession or the money to take care of the

indigent. Dr. Reynolds brought out facts that are hard to get around, but he indicates the government will give us money to take care of the indigent and allow us to spend it as we please. If we could handle that as agreeably as the Health Department has been handling the money from the government it would be workable, but they are not going to do that. They haven't done it with anyone else. They have shown us a little more courtesy, but we feel that a man is just as much entitled to a free house, free clothes, free legal service, etc., as he is to free medical service. When the government gets out of preventive medicine it is stepping into private grounds. I believe America has done the finest work in medicine of any country and we have done it through private medicine. I believe that some plan could be worked out, for if we throw the ball back they may play ball themselves. I do not believe state medicine is a good thing but the indigent must be taken care of. In our county we have a Board of Health and a county physician who is paid so much a month to look after indigent poor. Those that need operations are sent to the hospital free. Experts in the hospital can give good care. The indigent gets just as good care as those who pay. If it could be arranged so that each county could have a county physician to look after them the problem might be solved. It would be better than distributing this work among all the doctors. Of course, the objection that they are not receiving the same expert care as others may be raised but they are no more entitled to the very best medical care than they are to the best houses, cars, etc., but they are entitled to adequate care.

The following committee was appointed by the President to draw up the resolutions to be presented immediately after lunch: Dr. Terry, Dr. George Mitchell, Dr. Whitaker, Dr. Long, and Dr. Johnson:

The meeting was adjourned for lunch to meet again at 2:00.

The meeting reconvened at 2 p.m.

At the meeting of the House of Delegates in Winston-Salem it was moved that the dues be reduced from $10.00 to $8.00. This motion was referred to the Executive Committee for final approval. Dr. Houston Moore made the motion that the Executive Committee approve the action of the House of Delegates in reducing the dues from $10.00 to $8.00 for the year 1938. The motion was seconded by Dr. R. C. Mitchell. The motion was unanimously passed.

Dr. McBrayer stated that the bill passed appointing committees to study the four-year Medical School was with the understanding that it was to be at the expense of the Society. The Finance Committee did not mention it in their report.

Dr. Peery stated that Dr. Manning and Dr. Mangum stated that the expenses should be nominal. First, it should be decided as to what class medical school is desired. Of course, a first class school is the only one to be considered. Dr. Mangum expressed the opinion that $100.00 would

be enough to find out how much the establishment of the school would cost.

Dr. McBrayer: I would be opposed to sending a report to the legislature that would not be in keeping with recent reports gotten out by Duke University. I should think it would cost more money than that to pay a stenographer. Much to my regret, the University professors seem to oppose the idea of a Medical School.

I move that the Secretary of the Medical Society of the State of North Carolina be authorized to pay such bills for expense of the Medical School committee as are approved by the Executive Committee and by the Chairman of the Committee up to $300.00. Motion seconded by Dr. Houston Moore.

Dr. Houston Moore: I believe that no school should be built except a first class one. It takes money and I don't know where the money is to come from. I believe two-year schools eventually will be doomed. It is going to be difficult for two-year schools to get their students placed. The State Board examines on the average of from 90 to 100 new doctors a year. If we are going to undertake the education of Medical students there is a need for another school. Duke will take only a few students from North Carolina. Don't think you can start a medical school without a large amount of money. It can't be done without a few hundred thousand dollars. If it is done it must be done right. The faculty should be men who are outstanding and will command respect of all the professions. If we do, I should like to see the faculty composed of outstanding and not mediocre men. I would rather see no school than a mediocre one.

Dr. Carrington: I know nothing about the school, therefore, I move that the privilege of the floor be given to Dr. Lawrence.

Dr. Lawrence: I did not understand that the Medical School matter would be brought up today. I don't believe that work can be done for $100.00. There are two committees—one ours and one a legislative committee. I believe Dr. McBrayer has reference to the Medical Society Committee rather than the legislative one.

Dr. Mitchell: Suppose we wait until the Medical Society Committee holds a meeting and asks for money. I think that we should not pay for a legislative committee.

Dr. Long: The act of the legislature was with the intent that the men serve without pay, and I am willing to do so.

Dr. McKnight: I understood that this appropriation was to spend money for the need of the Society Committee and not legislative committee.

Dr. George Mitchell made the motion that the committee meet and ask for an appropriation and that we wait until that meeting to act. Motion seconded by Dr. Terry and unanimously carried.

Dr. McBrayer: I would rather that we have no medical school at all than to send up a report that will be a disgrace and that will go against our getting a bill through the legislature rather than helping us. I took the liberty of suggesting to the Finance Committee the amount that should be appropriated for this. I am willing to help with whatever money is necessary to spend in getting up this report if it should be that the Society does not see fit to use its money for this.

Dr. George Mitchell: The Section on Practice of Medicine has been greatly handicapped in previous meetings because of the time at which its program is held. I move that the Secretary in drawing up the program for next year place the section on Practice of Medicine on Tuesday along with the Surgery meeting. The motion was duly seconded and unanimously adopted.

President Johnson: Any further business?

Dr. Long reported from Committee on Resolutions, reading the resolutions as follows:

RESOLUTION PASSED BY THE EXECUTIVE COMMITTEE OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA JULY 13, 1937

Whereas, the reports from the House of Delegates of the American Medical Association at Atlantic City, June 7 to 10, 1937, indicate that a plan is being contemplated by the Federal, Executive, Administrative, and Congressional authorities to place the practice of medicine in the United States as it involves the Medical care of indigent persons, under Federal Government Control, and

Whereas, the Executive Committee representing the Medical Society of the State of North Carolina hereby affirms its willingness to cooperate at all times with the proper authorities in order to secure adequate medical care for all indigent persons, yet at the same time is convinced that such care is distinctly a state and county responsibility and is properly a function of the local governmental unit and local medical profession, and

Whereas, Federal supervision of the medical care of the indigent without local control by the component medical units of the various State Medical Societies will destroy those principles which maintain for the public the highest quality of medical service and the possibility of improvement in this service.

Therefore, Be it Resolved, that the Medical Society of the State of North Carolina, in justice to the medical profession of the state, hereby records its unequivocal opposition to any plan that involves federal supervision and control of medical practice in the United States. Yet while feeling that the care of the indigent and other social aspects of medical practice are community problems they stand ready and willing through their constituted authority to furnish any statistics and aid in the solution of this problem.

Be it Further Resolved, that a copy of these resolutions be forwarded to the secretaries of all state medical associations with the recommendation that similar resolutions be adopted by such associations, and

Be it Further Resolved, that copies of these resolutions be forwarded to all of our congressional representatives in Washington.

President Johnson: You have heard the report.

Dr. McKnight moved that the report be adopted. The motion was seconded by Dr. Julian Moore and the report was unanimously adopted.

Dr. Carrington: I have had a letter from Dr. Davison asking that the date of the annual meeting be changed because of a conflict with the American Association of Physicians.

President Johnson: I had several requests of that kind and tried to move the date of the meeting, but the place had already been set and they could not take us a week earlier or later at Pinehurst.

Dr. Long: The House of Delegates sent us to Pinehurst, so we had to take what we could get. We can take care of that in the future, however, by making arrangements earlier.

President Johnson: We all, I am sure, regretted the untimely death of Dr. Coite Sherrill, whose death left two vacancies to be filled. I have appointed Dr. R. H. Hardin of Banners Elk on the Post-graduate Medical Study Committee and I will make the other appointment soon. Dr. Cobb and Dr. Smith sent in their resignations as members of the Advisory Committee to the Industrial Commission. I wrote them and asked them to reconsider and stay on if possible. Dr. Smith has definitely refused to stay on, but I have not yet heard from Dr. Cobb.

There was an inquiry about the purchase of equipment for the Secretary's office. Dr. Long reported that the entire Executive Committee had approved the purchase and most of the equipment had already been bought.

Dr. Lawrence: I want to say that we covet your goodwill, your sympathy, and your understanding in this undertaking. I believe that the establishment of this school will mean a great deal to our profession in this state and it is with that thought in mind that I shall undertake whatever we may be able to do as a member of that Commission and I sin-

cerely want the coöperation and interest of every member of this committee and its advice and criticism at all times.

Dr. Long: We appreciate both your criticism and advice. We want criticism before we act so that we may act more nearly according to your wishes.

President Johnson: I thank you for coming to this meeting. I am realizing every day that this is an even bigger job than I had thought. I shall do my dead level best and want you to help me with your suggestions, criticism, and advice. I am going to try if possible to get to every district sometime during the year.

Dr. Long: Will each of you send your mileage for this meeting to me so that we may send you checks covering your traveling expense for the meeting. At the request of the president, Dr. Holt and Dr. Myers came to this meeting. I think they are entitled to mileage, too, and I shall ask them to send me their mileage, too, if there are no objections.

Adjournment.

President Johnson: We now come to reports of committees. The first committee is the Medical Society Foundation, of which Dr. John Q. Myers is chairman.

Dr. Myers: Mr. Chairman, so far as I know, I have received no letters. I am sure I haven't received any money. It hasn't been mentioned. We have had so much going on in the state, and so many other things, that I have hesitated to do what I expected to do, and that was to mail a card to every doctor in North Carolina asking if he didn't want to give a dollar to start it. We surely should do something to start this Foundation, and there is no better time than the present. But nothing has been done, nothing has been said; there have been no meetings and no discussions.

President Johnson: The next committee to report is the Committee on Legislation, Dr. Hubert B. Haywood. He is not present. I suppose he has no report anyway, because the Legislature didn't meet.

The Committee on Hospitals, Dr. J. W. Gibbon, Chairman. (Not present.) Is Dr. Wooten or Dr. Goode present? (Not present.)

The Committee on Cancer, Dr. H. B. Ivey, Chairman.

Dr. Ivey: Mr. Chairman and Gentlemen: Your committee in reporting its activities for the past year feels that it has accomplished more than in the year just preceding. Through last summer and fall members of the committee and other physicians throughout the state who had volunteered their services addressed quite a number of medical societies on the subject of cancer.

The Women's Field Army has been active during the whole year and the committee has been called upon to furnish speakers to lay audiences

on numerous occasions. These speakers have been supplied. In most instances these speakers have come from the local profession. The Commander of the Field Army, Miss Ethel Parker of Gatesville, North Carolina, has been very active. She has formed permanent organizations in about one-third of the counties in North Carolina. These organizations will carry on an active educational campaign indefinitely. She hopes in another year to have a field force that will be constantly at work to fight cancer with a knowledge of the facts about the disease. If this status can be attained it will help the average person to know what to do about it. In other words, if people can know the symptoms we feel that it will help us to get these people when something can be done for them.

On November 11 your committee met in Raleigh and was honored by the attendance of our President, Dr. Wingate Johnson. At this meeting the best approach to the cancer problem as it concerns the physician was the topic of the meeting. The following things were brought up for consideration.

1. The State of North Carolina has a population of 3,170,276. In the year 1932 there were 1,657 cancer deaths in the state. In the year 1937 there were 1,890 deaths due to the same disease, an apparent increase of 233 persons to die from cancer. Of course, there has been some increase in population but still this is twice too many deaths from this disease. We believe this death rate can be reduced at least one-half. The status of cancer today is the same as that of tuberculosis a few years ago. The late cases are receiving treatment with the consequent high mortality while the early cases are going untreated and sometimes undiagnosed. Therefore the committee decided to beg for the coöperation of every practicing physician in this state to aid in reducing this mortality by being ever alert to the first signs of this disease.

2. The second consideration was in regard to lay education, which included radio broadcasts and newspaper publicity. The conclusion reached in this discussion was that the field army was doing enough of this work. The decision of the committee was that this work could be better done by the family physician. If the family doctor in whom his patients have the utmost confidence would spread this information it would cause less excitement and certainly receive more serious consideration by the public at large.

3. The third subject taken up at this meeting was the advisability of holding a Post-graduate Clinic in the state for physicians. It is a recognized fact that to keep abreast with the advances in medicine we must constantly read and visit the larger centers of learning and sit at the feet of the leaders, so it was decided to hold this clinic. Three leaders of the medical world in cancer work were selected and the following program was rendered at Wake Forest Medical School on April 14 and 15 of this year.

PROGRAM

Thursday, April 14

10:00 a.m.

Dr. O. L. Miller, Charlotte, N. C.
Presiding

TUMORS OF BONE:

Dr. Charles F. Geschickter, Baltimore, Maryland.
Dr. Max Cutler, Chicago, Illinois.

Of course, you all readily recognize the name of Dr. Geschickter as being one of the authorities in bone. The book by Geschickter and Copeland is considered one of the foremost authorities on diseases of bone.

2:00 p.m.

Dr. Barnes Woodhall, Durham, N. C.
Presiding

TUMORS OF THE PERIPHERAL NERVES AND SPINAL CORD:

Dr. J. Grafton Love, Rochester, Minnesota.
Dr. Max Cutler, Chicago, Illinois.
Dr. Charles Geschickter, Baltimore, Maryland.

This was an extremely interesting discussion and one of the best I have ever heard. Of course, I know very little about the nervous system, but it certainly was simplified and I believe was of benefit to every man who listened to it.

7:30 p.m.

Dr. Barnes Woodhall, Durham, N. C.
Presiding

Dr. Hubert Royster was supposed to preside but unfortunately he was ill and not able to attend this meeting, so Dr. Woodhall again presided.

TUMORS OF THE BRAIN:

Dr. J. Grafton Love, Rochester, Minnesota.
Dr. Max Cutler, Chicago, Illinois.
Dr. Charles Geschickter, Baltimore, Maryland.

10:00 a.m.

Friday, April 15

Dr. Leslie Lee, Kinston, N. C.
Presiding

TUMORS OF THE FEMALE GENERATIVE ORGANS:

Dr. Max Cutler, Chicago, Illinois.

Dr. Cutler is one of the foremost therapists of the country, certainly in radiology. He is not entirely a radiologist. He is a surgeon. His paper was

open for discussion and was joined in by the other men who were present. Dr. Geschickter, in particular, threw his surgical knowledge on it. This made the discussions extremely interesting because we got both points of view: that of the surgeon and that of the radiologist.

2:00 p.m.

Dr. H. B. Ivey, Goldsboro, N. C.
Presiding

TUMORS OF THE SKIN AND ORAL CAVITY

(Dentists invited):

Dr. Max Cutler, Chicago, Lllinois.
Dr. Charles Geschickter, Baltimore, Maryland.

7:30 p.m.

Dr. Ivan Procter, Raleigh, N. C.
Presiding

TUMORS OF THE BREAST:

Dr. Charles Geschickter, Baltimore, Maryland.
Dr. Max Cutler, Chicago, Illinois.

I believe that this was one of the best post-graduate clinics that I ever attended.

Letters of invitation and a copy of the program were sent to every member of the State Society by our Secretary, Dr. T. W. M. Long. The attendance was very gratifying and I think it was one of the most complete symposiums in this disease that has ever been presented in this state.

The committee has two recommendations to make to the Society:

1. That this Post-graduate Clinic be held each year in the state; that the location of the clinic be shifted from one section of the state to another in order to make it available to the largest number of men.

2. That the Cancer Committee be a rotating one with men selected each year from different sections of this state.

Respectfully submitted,
Thomas L. Lee,
C. C. Carpenter,
H. B. Ivey, Chairman (Applause).

President Johnson: Gentlemen, you have heard Dr. Ivey's report. Is there any discussion? If not, a motion to accept the report is in order.

Dr. Charles F. Strosnider (Wayne County): Mr. President, I move we accept the report.

The motion was duly seconded.

President Johnson: Is there any discussion? If not, all in favor of the motion to accept Dr. Ivey's report make it known by saying "Aye"; opposed, "No." The motion is carried.

The next committee on the list is the Public Relations Committee. Dr. Holt of Greensboro was chairman of that committee. He called me over long distance telephone Saturday night and asked me to state for him that he would not be able to attend the meeting much to his regret, but that he had no report to make anyhow, that they had had a very peaceful, quiet year.

The Committee Advisory to Industrial Commission, Dr. Donnell B. Cobb, Chairman.

Dr. Cobb!

Dr. Cobb: Mr. President and Members of the House of Delegates: Your committee, which was appointed in 1934 to confer with the Industrial Commission on contested bills has continued to function as best it could. During the past year, as you may know, Dr. Frank Smith of Charlotte resigned from this committee, and Dr. Suiter of Weldon was appointed to serve.

The number of contested bills during this past year has been sufficient to require only two meetings with the Commission. Although we well realize that we have not been able to accomplish what we wanted to, we have made a very sincere effort to settle these contested matters in fairness to all, and at times this had to be done in a spirit of compromise. We are well aware that very frequently satisfaction did not result.

The appointment of Mr. John C. Root to the secretaryship of the Commission deprived your committee of his very valuable advice in settling these matters and his subsequent sad and untimely death is certainly a loss to the medical profession in so far as our relations with the Industrial Act are concerned. We think that he was a man of sincere purpose and of much ability, and your committee will miss him.

The new chief claims adjuster, Mr. Leinster, did not consult with your committee at any of the subsequent meetings, but we did consult with the assistant adjuster, Mr. Carlson, and with the medical director, Dr. Horton.

All of our relations with the Commission continue to be very pleasant. We hope that the efforts of the committee are worthwhile, if not perhaps in securing all the satisfactory adjustments, at least in promoting a more friendly feeling between the profession and the Commission.

With this in mind, and in view of the recent changes that have taken place in the Industrial Commission, we recommend the continuation of such a committee. Perhaps it would be unwise to appoint an entirely new committee at one time. It is suggested that one new member be appointed to this committee each year. That would allow each member

to serve for a period of three years, and perhaps automatically, during his last year, become chairman of the committee. Having had the privilege and the honor of serving as chairman of this committee since its appointment in 1934, I very humbly ask to be relieved of further duties and suggest that Dr. Battle A. Hocutt, who has also been on this committee since its appointment, be chairman during next year, and that someone be appointed to take my place. (Applause.)

President Johnson: Gentlemen, you have heard this report. It brings back reminiscences to Dr. Manning and me. I remember the scrap we had when he was President.

Is there a motion to adopt the report?

Dr. Myers: I move that the report be adopted.

The motion was duly seconded.

President Johnson: Is there any discussion? If not, all in favor of the motion to adopt Dr. Cobb's report make it known by saying "Aye"; opposed, "No." It is carried.

The next committee to report is the Finance Committee, Dr. Vance Perry, Chairman.

Dr. Perry: Mr. Chairman and Members of the House of Delegates: The Finance Committee has examined the auditor's report, which was made by Everett, Zane and Muse, and find the financial condition of our Society in good condition, with a safe and satisfactory cash balance. We recommend that the dues be $8 for the coming year, to insure financial stability, as this is a legislative year, and occasion may arise which would make unusual demands on our treasury.

I have a copy of the proposed budget here which I will not go into in detail. That will be published in the Transactions, together with the audit.

Exhibit A

Cash Receipts and Disbursements

Year Ending December 31, 1937

RECEIPTS

	Budget Appropriation for year 1937	*Actual*	*Over or (Under)*
Dues	$9,600.00	$14,438.00	$4,838.00
Interest		62.50	62.50
Refund: Travel Exepnse 1936		48.40	48.40
Sale of Transactions		2.50	2.50
Total	$9,600.00	$14,551.40	$4,951.40

Add: Bank Balance, January 1, 1937			
Current Account	$ 449.92	$ 449.92	$.....
Certificate of Deposit	5,000.00	5,000.00	.....
Total	$15,049.92	$20,001.32	$4,951.40

DISBURSEMENTS

See Exhibit B for Detail of			
Total Revenue Disbursements	$12,650.00	$12,015.29	($634.71)
Loan Repaid	.....	1,000.00	1,000.00
Bank Balance December 31, 1937	2,399.92	.....	4,586.11
Current Account	.....	3,986.03	.....
Certificate of Deposit	.....	3,000.00	.....
Total	$15,049.92	$20,001.32	$4,951.40

SUMMARY OF UNAPPLIED CASH BALANCES

Total Cash Balances, December 31, 1937, unapplied		$6,986.03
Unapplied Balance, January 1, 1937	$4,449.92	
Revenue Receipts Exceeded Revenue Disbursements	2,536.11	
Total as per above	$6,986.03	

EXHIBIT B

CASH DISBURSEMENTS

Year Ending December 31, 1937

	Budget Appropriation for year 1937	*Actual Disbursements*	*Unexpended Balance*
Chairman of Sections:			
Stationery	$ 50.00	$ 29.89	$ 20.11
Councillor:			
Stationery	50.00	25.00	25.00
Travel	250.00	250.00	.....
Total	$ 300.00	$ 275.00	$ 25.00
Legislative Committees:			
To Dr. B. J. Lawrence	$1,000.00	$ 450.00	$ 550.00
Executive Committee:			
Expenses (Misc.)	$ 650.00	$ 799.57	($149.57)
Other Committees:			
Expenses (Misc.)	$ 250.00	$ 250.00	.....
President's Office:			
Travel Expenses	$ 400.00	$ 400.00	.....

CASH DISBURSEMENTS—Continued:

	Budget Appropriation for year 1937	*Actual Disbursements*	*Unexpended Balance*
Secretary's Office:			
Salary	$1,200.00	$1,200.00	.....
Clerical Assistance	1,200.00	1,133.32	$ 66.68
Office Equipment	1,600.00*	1,388.96	211.04
Stationery	100.00	66.15	33.85
Rent	300.00	310.00	(10.00)
Travel Expenses	600.00	623.98	(23.98)
Auditing	50.00	55.00	(5.00)
Miscellaneous and Emergency	900.00		150.28
Postage		148.00	
Telephone and Telegraph		178.76	
Janitor		62.40	
Express		24.91	
Insurance		81.00	
Office Supplies		105.60	
Miscellaneous		26.55	
Refund, Returned Checks and Interest		122.50	
Total	$5,950.00	$5,527.13	$ 422.87
State Meeting:			
Expenses	$ 500.00	$ 640.90	($140.90)
A.M.A. Delegates	200.00	200.00	.....
Expense—Speaker of Meeting	100.00	50.00	50.00
Transactions:			
Reporting and Preparation of Copy	250.00	181.00	69.00
Printing and Binding	3,000.00	3,211.80	(211.80)
Total	$ 3,250.00	$ 3,392.80	($142.80)
Total Revenue Disbursements	$12,650.00	$12,015.29	$ 634.71
Note Paid	.....	1,000.00	(1,000.00)
Totals: (To Exhibit A)	$12,650.00	$13,015.29	($365.29)

PROPOSED BUDGET, JANUARY 1, 1938, TO DECEMBER 31, 1938

Stationery—of all Officers except Secretary	$ 100.00
Councillors—Travel Expense	250.00
Legislative Committee	1,000.00
Executive Committee	650.00
Other Committees	250.00
President's Office—Travel Expense	400.00

* Appropriation: July 13, 1937, Subsequent to original Budget.

Secretary's Office;		
Salary		$ 1,200.00
Clerical Assistance		1,200.00
Stationery		100.00
Rent		300.00
Travel Expense		600.00
Auditing		50.00
Miscellaneous and Emergency: Postage, Telephone and Telegraph, Janitor, Express, Insurance, Office Supplies, Flowers, etc.		900.00
Expenses of State Meeting		500.00
A.M.A. Delegates		200.00
Expense of Guest Speakers		100.00
Transactions:		
Reporting and preparation of copy		500.00
Printing and Binding		3,000.00
Total		$11,300.00
Expected Income:		
1,450 members at $8.00	$11,600.00	
Cash Balance on Hand	6,986.03	
Expected Balance		$ 7,286.03

President Johnson: You have heard this report.

Dr. Charles F. Strosnider (Wayne County): I move it be accepted. The motion was duly seconded.

President Johnson: Is there discussion? If not, all in favor say "Aye"; opposed, "No." It is carried.

The next committee is the Printing Committee.

Secretary-Treasurer Long: Mr. President and Gentlemen: I have no written report. The low bid for this year for printing the Transactions was received from Edwards & Broughton of Ralegh and the committee unanimously awarded the printing to them.

President Johnson: This report does not call for formal adoption. Next is the Postgraduate Medical Study Committee, Dr. Paul Ringer, Chairman.

Dr. Ringer: Mr. Chairman, the report of this committee will be made by Dr. William H. Smith of Goldsboro, who knows a great deal more about it than the Chairman does.

Dr. William H. Smith: Mr. President and Members of the House of Delegates: Two members of the committee, Dr. Paul H. Ringer of Asheville and myself, met Dr. Wilbert C. Davison, Dean of the Duke Medical School at Chapel Hill on Jauary 11, 1938, and after conferring they agreed on a plan for postgraduate instruction at Duke Hospital, this plan to be sponsored by the Duke Medical School and the Medical Society of North Carolina. Dr. Davison, acting for the Duke Medical

School, agreed to the plan and it remains for the House of Delegates to agree and accept sponsorship jointly with the Duke Medical School for the promotion of the plan.

THE PLAN

1. The Duke Medical School and Hospital agree that they will receive as students for postgraduate work physicians of North Carolina without charge for the instruction, and that if possible a room in the hospital will be furnished a student together with board for $10.00 a week, and if no rooms are available in the hospital that they will endeavor to place the student in a nearby dormitory. This to constitute the sole charge for the instruction.

2. In order to avoid overcrowding and to make the work more available to the physicians, the selection of students will be made as follows: A physician desiring to take postgraduate work under the conditions set forth in article one shall make application to the councillor of his district and then either the councillor or with the councillor's okeh, the student, dealing directly with the Duke authorities, makes application. By this method more intensive courses can be arranged; also it is possible that overcrowding the courses and the hospital would be obviated. Too, better courses could be offered at certain times of the year than at others.

The committee feels that under this plan a physician could get postgraduate work near his home under competent instructors at practically no cost and the length of the course can be arranged to more or less suit the individual physician. The committee also feels that this is a chance that should be made known to all the physicians in North Carolina and feels that the proper body to advertise this course to the physicians and urge them to take it, is the Medical Society of the state. The authorities at Duke hesitate to advertise their facilities for post-graduate instruction, but they are willing to give the instruction if the State Society will sponsor, advertise, and urge the physicians of the state to avail themselves of the offer.

After this plan was proposed to Dr. Davison, he told the committee that Dr. William Allan of Charlotte had written him last fall and proposed the same plan. Dr. Allan, however, did not offer the way of getting students at Duke that this plan suggests.

Therefore, the committee moves that the House of Delegates sponsor this plan and that the proper means be taken to advertise it to the profession of the state.

The motion was seconded by Dr. Ringer.

President Johnson: You have heard this offer which is a very generous one. There has been a motion made to accept the report and it has been seconded. Is there any discussion?

Dr. E. A. Livingston (Scotland County): Mr. President, I move we accept that. I have attended some of the post-graduate courses given by the Jews of New York City and it is purely a commercial thing. Gentlemen, everything you get costs money. They can give you just as good a course over there and they are willing to give it to you, and I move the offer be accepted. Every time you hear a lecture in New York City it costs $5 or $10, you pay for anything you get. If they are going to give us something down here, it will be just as good and better. I move that we accept it, thank them for it, and make use of it.

President Johnson: Is there any further discussion? All in favor of accepting Dr. Smith's report and the recommendation contained in it, make it known by saying "Aye"; opposed, "No." It is carried.

Dr. Smith: I move that the President appoint a committee—in order to take the hard work off the shoulders of the Duke authorities—to advertise, sponsor, and endeavor to get the physicians to take this work, if the House of Delegates sees fit. Otherwise, the responsibility will fall on the officers of the Society, and I know they are burdened enough already.

The motion was duly seconded.

Dr. George W. Mitchell (Wilson County): I would like to amend the motion, that the Secretary take it up directly with the County Medical societies and have the secretary of each county medical society bring the matter before each society.

Dr. Strosnider: I second the amendment.

President Johnson: Is there any further discussion? You have heard the motion that a committee be appointed to advertise this to the doctors of the state, and that the Secretary coöperate by taking it up with each county society. All in favor say "Aye"; opposed, "No." It is so ordered.

Dr. Livingston: There is one other thing: The county societies should be notified as to the courses that will be given and the length of time it will take, so that anyone interested can make proper arrangements. We should notify the county societies about the length of time involved.

President Johnson: I am sure the committee will consider that.

Dr. Smith: Mr. President, Mr. Grumman, Director of the Extension Division of the University of North Carolina, is here. He has a report to make on the post-graduate work that the University of North Carolina is doing. May he have the privilege of the floor?

President Johnson: If there is no objection, we will be glad to give Mr. Grumman the privilege of the floor.

Mr. R. M. Grumman: Mr. President, Members of the House of Delegates: I am sorry Dr. MacNider is not here to present this. I have the honor to read a very brief statement.

Mr. Grumman presented his prepared report. (Applause.)

Mr. R. M. Grumman: The Extension Division and the School of Medicine of the University of North Carolina offered during the school year 1937-38 two extension courses of postgraduate instruction for practitioners of medicine.

The first was offered at Charlotte, with 191 registered. The course consisted of one meeting each week for seven weeks, extending from January 11, 1938, to March 1 (no meeting was held on February 22 due to the meeting of the Tri-State Medical Society being held in Asheville at that time). The cost was $15.00 per person, including dinner at each of the meetings. The counties served were: Mecklenburg, Lincoln, Gaston, Union, Stanly, Montgomery, Richmond, Anson, Cleveland, Caldwell, Catawba, Iredell, Rowan, Rutherford, and Cabarrus.

The program was as follows:

January 11, "Clinico-Pathologic Conference," Dr. O. H. Perry Pepper, Professor of Medicine, University of Pennsylvania, and Dr. Balduin Lucke, Professor of Pathology, University of Pennsylvania.

January 18, "Pneumonia," Dr. Russell Cecil, Professor of Clinical Medicine, Cornell University, New York City.

January 25, "Anæmias," Dr. Roy R. Kracke, Professor of Bacteriology and Pathology, Emory University, Atlanta, Ga.

February 1, "Endocrinology of Female Pelvis," Dr. J. P. Pratt, Surgeon-in-Charge Division of Gynecology and Obstetrics, Henry Ford Hospital, Detroit, Michigan.

February 8, "Diagnosis of Acute Surgical Conditions of the Abdomen," Dr. Arthur M. Shipley, Professor of Surgery, University of Maryland, Baltimore, Md.

February 14, "Heart," Dr. Paul D. White, Massachusetts General Hospital, Boston, Mass.

March 1, "Diagnosis and Treatment of Common Diseases of the Gastro-Intestinal Tract," Dr. Walter Alvarez, Mayo Clinic, Rochester, Minnesota.

The Charlotte committee arranged for a clinic each afternoon before the lecture with the visiting lecturer conducting the clinic. The attendance at these clinics was unusually high. About 260 physicians attended one or all of these lectures. The attendance at each lecture was about 200.

The second course was held at Greensboro, High Point, and Winston-Salem (two meetings in each place). The dates were from March 2 to April 7 and consisted of six lectures. The cost was $15.00 including dinner at each meeting. The number enrolled was 80 (nine of these being

colored). The counties served were: Guilford, Forsyth, Stokes, Randolph, Alamance, Rockingham, Davidson, Wilkes, and Surry. The program was as follows:

GREENSBORO

March 2, "Diagnosis and Treatment of Common Diseases of the Gastro-Intestinal Tract," Dr. Walter Alvarez, Mayo Clinic, Rochester, Minnesota.

March 10, "Diagnosis and Treatment of Syphilis," Dr. Norman R. Ingraham, Jr., University of Pennsylvania.

HIGH POINT

March 17, "Conditions That Simulate Abdominal Emergencies," Dr. E. J. B. Beardsley, Professor of Clinical Medicine, Jefferson Medical College, Philadelphia, Pa.

March 24, "Diabetes," Dr. Elliott Proctor Joslin, Medical Director of the George F. Baker Clinic of the New England Deaconess Hospital, Boston, Mass.

WINSTON-SALEM

March 31, "Blood Dyscrasias," Dr. Maurice C. Pincoffs, Professor of Medicine, University of Maryland, Baltimore, Md.

April 7, "Vitamins," Dr. Harry Bakwin, Associate Professor of Pediatrics, New York University.

Both these courses were conducted under the same plan as the courses held in Raleigh and Goldsboro last year. The same central committee worked with the local committees to help promote and to plan the courses. Both the centers have asked for another course next year and we have under consideration one or two more centers in the state for courses.

The University of North Carolina is interested in coöperating with groups of physicians in conducting similar courses in any part of the state. The plan is designed to provide the kind of instruction desired by the practicing physicians.

President Johnson: Mr. Grumman, we are very glad to have this additional report from you. I am sure those who attended those postgraduate courses do not regret it and look forward to the continuation of the work next year.

Is Dr. W. C. Davison of the Children's Bureau here? (Not present.)

The Committee on Syphilis Control, Dr. J. C. Knox, Chairman. (Not present.)

The Committee Advisory to Woman's Auxiliary, Dr. V. S. Caviness, Chairman. (Not present.)

The Committee on the Social Security Act, Dr. Forrest M. Houser, Chairman.

Dr. Houser: Mr. President, Members of the House of Delegates: This committee has transacted no business that will require action of the House of Delegates.

President Johnson: The Committee to Study Third- and Fourth-year Medical School, Dr. C. F. Strosnider.

Dr. Strosnider: Mr. President and Members of the House of Delegates: The activity of your Committee on Study of a Four-year Grade A Medical School has been confined to our coöperation with the Governor's Committee which is studying and reporting on this important subject.

Your committee was invited to meet with the Governor's Commission in Raleigh this winter. At this meeting your committee asked the said Commission to advise us in what way we could best serve the Commission, and we were advised that we could best serve the Commission by doing educational work.

Having the utmost confidence in the personnel of the Governor's Commission it is the desire of your committee to coöperate with them to the fullest extent possible. Therefore, we are of the opinion that our committee, being composed of doctors, we should speak, to and through the members of our profession, to the general citizenship of our state who would be mutually benefited by the establishment of a Grade A Medical School as part of our State University—two years of this school now being successfully conducted at Chapel Hill.

EDUCATION

Right here, under the heading of education, I feel that it is time for us to speak and to do good educational work in assisting our Legislative Committee. My friends, the time to do legislative work is before the legislators get to Raleigh. Speak to your men who are running for nomination in the counties now and see that they act favorably, or will assist our Legislative Committee on the problems which they will present to them when they get to Raleigh. This is the time to do your work. It will save your Finance Committee a great deal of worry and your Legislative Committee a great deal of hard work, which many times is useless. I feel that the success of our last Legislative Committee was due to the fact that the membership of our profession spoke to the Senators and Representatives before they were nominated.

Your committee is of the opinion that postgraduate teaching is the outstanding medical problem of our day. We have had sufficient experience in our state with post-graduate work to know that the doctors are interested in maintaining a suitable standard of professional fitness.

Postgraduate education should be under academic direction. Hence, the University of North Carolina, a state tax-supported institution, engaged in undergraduate medical education, would have a particular

obligation to undertake such a program, which, after all, is but a continuance of its undergraduate teaching designed to supply competent medical service to the people of our state.

We have many physicians and surgeons in our state who are interested in medical education and many of these doctors are qualified to teach. They could be invited to teach in the capacity of extra-mural members of the Medical School faculty. Such a program could be best supervised by a department of postgraduate medicine established in the Medical School of our State University to direct the medical postgraduate activities. To such a program the State Medical Society could lend its full coöperation through an Advisory Committee, or our Committee on Post-graduate Education. With a suitable plan of organization, postgraduate work could be placed within the reach of every practioner in our state. This is necessary, if postgraduate work is to meet the needs of our profession in the present and in the future; some plan must be developed whereby the postgraduate course can be taken to the practitioner.

The State of Michigan has had a postgraduate medical program in force for the past eight years with the following results: "During the eight years that this program has been carried out there have been 4,774 registrations, 2,127 Michigan physicians taking from one to seventeen courses each. In 1929 seventy-six Michigan physicians took postgraduate work, forty-four in the Michigan program and thirty-two outside the state. In 1936 there were 1,589 in attendance on the state courses and 143 on courses outside of the state, a total of 1,732. The cost of the program last year was about $10.00 per capita."

Dr. James D. Bruce states: "Year by year the practitioner finds himself removed further and further from the science that underlies sound medical practice, that postgraduate medical instruction should be directed by those intimately in touch with the sources of knowledge in their respective fields."

The success of our present Postgraduate Educational Committee can be attributed to their following a policy similar to the one outlined by Dr. Bruce.

We feel that for the postgraduate work to be a success, and to be made available to all the practitioners, wherever the practitioner sends his patients there should be men competent to carry on postgraduate work in line with the supervision of our own Postgraduate Educational Committee. I feel that some such course is necessary. This Third- and Fourth-year Medical School, Mr. President, Grade A Medical School, will serve the greatest needs of the people of North Carolina through the medium of keeping our profession up to date, and by so doing, the population of our state and the citizeship of our state will receive better medical and surgical treatment. And the general public of our state will thereby be benefited. (Applause.)

President Johnson: You have heard the report of the committee. A motion to adopt is in order.

Dr. Myers: I move the report be adopted.

The motion was duly seconded.

President Johnson: Is there any discussion? If not, all in favor say "Aye"; opposed, "No." The motion carries.

At this time I am going to ask Dr. Manning, whose service expires this year with the Hospital Savings Association, to give a brief report. (Applause.)

Dr. Manning: Mr. President, Gentlemen of the House of Delegates: Three years ago the Medical Society and the Hospital Association of North Carolina sponsored a movement for a group payment plan in this state, the Medical Society appointing four trustees, of whom I was one, and the Hospital Association appointing four. And those eight men were to choose four representative business men to serve on the board.

As this is the third year—I was appointed for three years and retire at this time—I thought it would be wise to make a report.

The grant of $25,000 made by the Duke Foundation proved sufficient to finance the organization during the difficult introductory period. At the time this fund was exhausted the Hospital Saving Association became self-supporting.

The following is a statement of its position as of April 1, 1938:

Total Membership	53,576
Total Cash Reserves	$28,239.36

The growth in membership and cash reserves are indicated by the following:

On December 31 the total membership was 36,913. During the first quarter of this year, January, February, and March, the membership increased by 16,663, an average per month of 5,554. If that rate of increase continues throughout the year, we will have at the end of the year approximatey 90,000 to 100,000 members in this state.

On December 31, the cash reserves were $15,546.61. During January, February, and March of this year, the first quarter, the increase was about $12,692.75, making the present cash reserve $28,239.36, which is a few thousand dollars over the original grant of the Duke Foundation, an average increase per month of $4,230.90.

In addition to that we have office equipment of around $3,500.

During 1937, the Association paid to the hospitals $78,909.49. During January, February, and March of this year, the first quarter, we paid the hospitals $39,197.71, an average of $13,065.90 per month.

We may predict, if nothing happens and the progress of the Association continues as it has for the first quarter, that we will pay the hos-

pitals of North Carolina something like $250,000 during the current year.

The first group of trustees were asked to serve one, two, and three years. The President, of course, is a member of the Board of Trustees. That three-year period has ended. We feel that from now on, at all subsequent elections, the trustees should serve for three yars. That would keep the group from being completely changed at any time, which we think is very necessary and very desirable. So that hereafter trustees will be elected for three years, which will keep on the board men who have experience and who are able to carry on in much the same way.

This is the time that my service expires, and I thank you very much. (Applause.)

Dr. R. D. McMillan (Robeson County): I move that this body accept Dr. Manning's report. I also move, if it is in order, that Dr. Manning be retained, as he has served so admirably in the last three years.

The motion was seconded by Dr. Myers.

President Johnson: I wish I could make that motion myself. I don't think I could be accused of "politicking" in suggesting that we couldn't do better than to reëlect him.

All in favor of accepting Dr. Manning's report and of electing him for another three-year term, make it known by saying "Aye"; opposed, "No." It is absolutely unanimous.

We will have the report now from the delegates to the American Medical Association, Dr. John Q. Myers.

Dr. Myers: Mr. President and Gentlemen: Your duly elected delegates attended the meeting at Atlantic City—that is, Dr. Johnson and I. We were there on time and registered in due form. We received our appointed sheets, and were behind closed doors soon after arriving.

I am pleased to report that at the roll call at the opening of the meeting, 102 delegates were present out of a possible 174. There were 167 registered.

The Speaker of the House, Dr. N. B. Van Eaton, called the House to order promptly at ten o'clock Monday morning. Immediately after the House was called to order, we had some surprises in the form of the Speaker asking the Secretary to read telegrams received from Washington from Senator Lewis in regard to the questions about which you have read in the Medical Journals and in the lay press.

This was a most interesting meeting from many viewpoints. Everybody was on edge. Nobody knew just what was coming next. We still don't know, but we are battling to the front. Every now and then we hear some gunshots on the outside, and some firing on the front, but so far, the American Medical Association has been able to stand and not

take any orders, so to speak. But it has always been open for advice from those who are willing, and want to help us.

I believe that covers what occurred, without reading a long document which I have setting forth all the various things that happened, because you have all read about it in the Journals. As I say, it was a most interesting meeting. One of the most impressive things, to me, was the fact that thirty-seven of the delegates at the meeting had attended the meetings for more than twenty years.We folks down in this country somehow or other get to shifting things about. It is not only an honor but a duty to attend the meetings of the American Medical Association, and somebody should be elected who will continue to attend until he wants to quit, or until he fails to do his duty. It is a very important thing.

I have attended ten meetings in thirty years as a delegate. I wish somebody would just spring up out of the fields and start in, because we need leaders in the American Medical Association just as we do here. Looking out over this House of Delegates, the faces are very familiar to all of us—Dr. Highsmith, Dr. Manning, and all of these men who have been attending these meetings continuously, also Dr. James. If some of us don't attend to these things, somebody will attend to them for us.

Thank you. (Applause.)

President Johnson: You have heard this report. If there is no objection, it will be accepted.

We will now hear Dr. Hamilton McKay's report from the Board of Medical Examiners. Is Dr. McKay here?

Dr. Vernon, will you report for the Medical Examiners?

Dr. McKay: The Secretary has a report to make to you.

Dr. Benjamin J. Lawrence: As Secretary I merely wish to remind the House of Delegates that your Board of Examiners is drawing near to the close of the six-year term. As many of you already know, it will become your duty and responsibility to elect a new Board of Examiners, I believe, the day after tomorrow. The present board will give one more set of examinations at the annual meeting in June.

At the last meeting of the Board of Examiners, a special committee was appointed, composed of the President, Dr. Vernon, the immediate Past President, Dr. McKay, to coöperate with the Secretary in preparing what we hope will be a comprehensive report of the term of this Board of Examiners. We hope to have that ready by the time our term closes, and we will ask that that be printed in the Transactions. We will not burden you at this time with a long and detailed report.

President Johnson: You have heard this report. It calls for no official action.

Next is the reports of the councilors. The Secretary suggests that all these reports be filed, unless some councilor has a matter that he particularly wants to bring before the House.

If there is no objection the reports of the councilors will be filed, and we will go on to new business.

REPORT OF COUNCILOR OF THE FIRST DISTRICT MEDICAL SOCIETY

Since the last meeting of the State Medical Society the First District has had four meetings: the first was at Windsor on June 22, 1937; the second at Nags Head in August; third was at Elizabeth City on November 30, 1937; the fourth was at Edenton on March 1, 1938. Each meeting was well attended and scientific papers were read and discussed.

So far as I know, peace and harmony prevails throughout the entire First District Society.

Respectfully submitted,
H. D. Walker,
Councilor of the First District.

REPORT OF COUNCILOR OF FOURTH DISTRICT

Mr. President:

Your councilor wishes to report a continuation of the excellent feeling and interest in organized medicine in this district. There is an active society in each county of the district. There has been no friction or ill feeling amongst the physicians.

In my visit to the various counties I have stressed the hearty support of each county society in supporting our organization in its fight on State Medicine.

Respectfully yours,
George W. Mitchell,
Councilor Fourth District.

REPORT OF COUNCILOR OF THE FIFTH DISTRICT

The Fifth District Medical Society meets in the fall and spring. These meetings are well attended; the papers presented are interesting. Each county Medical Society in the district is well organized and holds regular meetings.

No controversies of any kind have arisen and your councilor has not been called upon to act on any matters pertaining to the profession. Good fellowship prevails in the entire district

W. D. James, M.D.,
Councilor Fifth District.

REPORT OF COUNCILOR OF SIXTH DISTRICT

Mr. President and Members of the House of Delegates:

The sixth district appears to be in its usual healthy state. With three Medical schools within its borders, it should be. The district has an occasional pain as may be expected in any young growing organism but these pains are usually short lasted and probably result in more good than harm.

The larger county societies have regular, well attended and interesting meetings. Some of the smaller societies have not been meeting as often as they should.

A district meeting is held once a year. The last meeting was held in Roxboro on June 23, 1937.

Respectfully submitted,

George L. Carrington.
Councilor of Sixth District.

REPORT OF COUNCILOR OF SEVENTH DISTRICT

Mr. President and Members of The House of Delegates:

As Councilor for The Seventh District I make the following report.

There has been a most gratifying feeling of harmony and ethical relationship among the phyiscians in this district this year. No question or situation has arisen requiring the services of the councilor for settlement.

I have visited some of the regular meetings of the most active county medical societies and found them well attended and presenting the best type scientific programs. There are several counties that can not have frequent scientific meetings because of the small number of physicians living there.

The series of Postgraduate Clinics and Lectures arranged by The University of North Carolina Extension Division and given in Charlotte were well attended and the feeling in general is that they were well worth while. We were most fortunate in securing speakers with national and international recognition in their special fields.

The annual District Meeting was held November 2, 1937 at Shelby with the following program:

HOTEL CHARLES, SHELBY, N. C.

Meeting Called to Order
Dr. B. H. Kendall, Councilor
(All Papers Limited to 15 Minutes)

"Menstruation," Dr. D. F. Moore, Shelby, N. C.
"The Abuse of Digitalis," Dr. L. A. Crowell, Jr., Lincolnton, N. C.
"Physical Medicine as related to Oxygen Therapy, Vascular Therapy and Fever Therapy," Dr. Stephen W. Davis, Charlotte, N. C.

"The Management of Posterior Positions," Dr. W. W. McChesney, Gastonia, N. C.

"Ultimate Results in 218 Patients with Sterility," Dr. Robert Thrift Ferguson, Charlotte, N. C.

"Causes and Treatment of Cystitis," Dr. A. J. Crowell, Charlotte, N. C.

4:00 P.M.

Dr. Wm. B. Porter, Professor of Medicine, Medical College of Virginia, will hold a Clinic from 4 p.m. until 6 p.m. Many members of the Society will remember the very successful clinic conducted by Dr. Porter at the Charlotte meeting in 1929 and we are expecting a fine clinic at this time.

BANQUET 7:00 P.M.

Invocation, Rev. Horace Easom.
Address of Welcome, Mr. Harry Woodson, Mayor.
Response, Dr. John Hill Tucker, Charlotte, N. C.
Entertainment during banquet furnished by local Committee on Arrangements.
Address, Dr. Wm. B. Porter, Richmond, Va.

Respectfully submitted,
BEN H. KENDALL,
Councilor of the Seventh District.

REPORT OF COUNCILOR OF EIGHTH DISTRICT

Mr. President and Members of the House of Delegates:

The Eighth District Medical Society has held two meetings this year, the first at Winston-Salem, Tuesday, October 19, 1937 and the second at Greensboro, April 26, 1938. The programs of these meetings are hereto attached. The standard of the scientific meetings was higher than the previous years and the attendance at the dinner meetings was larger than usual.

The most noteworthy evidence of advancement in scientific medicine was a postgraduate course conducted by the Forsyth and Guilford County Medical Societies, and which was attended by physicians from the outlying counties, the program of which is hereto attached.

Tuesday, October 19, 1937

AFTERNOON SESSION

Two o'clock

Robert E. Lee Hotel

Papers by members limited to twenty minutes and discussions to ten minutes

Invocation, Rev. S. W. Hahn, Pastor Lutheran Church.

Welcoming Remarks, Dr. Wingate Johnson, President State Medical Society, Winston-Salem, N. C.

SYMPOSIUM ON INFECTIONS AS RELATED TO GENERAL PRACTICE

1. "Kidney Infection," Oliver J. Hart, M.D., Winston-Salem, N. C. Discussion opened by Fred Garvey, M.D., Winston-Salem, N. C.
2. "Infections of Pregnancy, Labor and Puerperium," Kenneth Geddie, M.D., High Point, N. C. Discussion opened by Paul Johnson, M.D., Winston-Salem, N. C.
3. "General Infections with Newer Methods of Treatment," William Hester, M.D., Reidsville, N. C. Discussion opened by Russel Lyday, M.D., Greensboro, N. C.
4. "Experiences with Sulfanilamide," Moir S. Martin, M.D., Mount Airy, N. C. Discussion opened by Roy Mitchell, M.D., Mount Airy, N. C.
5. "Conditions Simulating Hyperthyroidism," William Sprunt, M.D., Winston-Salem, N. C.

Business.
Election of Officers.
Selection of Place for Next Meeting.

EVENING SESSION

Six-thirty p.m.

Robert E. Lee Roof Garden

Dinner for Members and Guests.
Music.
Introduction of Special Guests.
Address: "The Effect of Infections on Mental and Emotional Diseases," Sylvia Allen, M.D., Baltimore, Maryland.

Tuesday, April 26, 1938

SCIENTIFIC SESSION

FLORENTINE ROOM

Meeting called to order 2:15 p.m.

Greetings: Dr. R. O. Lyday, President Guilford County Medical Society.
Discussion Plans for State Medical Meeting: Dr. Wingate Johnson, President State Medical Society.

1. "Surgery of the Prostate with Particular Reference to Pre-operative Studies and Preparation" (To be demonstrated with Lantern Slides), Dr. Fred M. Patterson, Greensboro, N. C. Discussion, Dr. Fred Garvey, Winston-Salem, N. C.
2. "Surgical Gynecology vs. Endocrines," Dr. G. Carlyle Cooke, Winston-Salem, N. C. Discussion, Dr. Harry Brockman, High Point, N. C.
3. "The Classification and Mechanism of the Anemias," Dr. Robert W. Matthews, Greensboro, N. C.
4. "X-Ray Treatment of Acute Infections," Dr. B. E. Rhudy, Greensboro, N. C.
5. "Hypernephroma—Case Report," Dr. W. B. Norment, Greensboro, N. C. Discussion, Dr. E. D. Apple, Greensboro, N. C., and Dr. Dempsey Barnes, Asheboro, N. C.
6. "Present Status of Gallbladder Surgery," Dr. George Wood, High Point, N. C.

7. "The Practical Application of the Erythrocyte Sedimentation Rate in the Acute Abdomen," Dr. C. L. Haywood, Jr., Elkin, N. C.

New Business.

Selection of Place for Next Meeting.

Election of officers.

Fifteen minutes is allowed for the presentation of each paper and five minutes for the Doctor named for discussion. Impromptu discussion from the floor will be limited to two minutes for each member. It is requested that all those participating in the program have their papers to conform to these rules in order that the program may go through on time.

EVENING SESSION

6:45 p.m.

KING COTTON HOTEL BALLROOM

Dinner: Music furnished by A. & T. Male Quartet.

Report of District Councilor: Dr. Roy C. Mitchell, Mount Airy, N. C.

Introduction of Speaker: Dr. J. W. Tankersley, Greensboro, N. C.

Address: "Emotion, Reason, Balance," Dr. Beverly R. Tucker, Tucker-Master Sanatorium, Richmond, Va.

Announcements.

Adjournment.

Respectfully submitted,

ROY C. MITCHELL, M.D.,
Councilor of Eighth District.

REPORT OF COUNCILOR OF TENTH DISTRICT

The affairs of the Tenth District have progressed very satisfactorily during the past year. Two excellent meetings of the Tenth District Society have been held and were well attended.

Some of the smaller counties in the District do not have active societies, and so far, I have not been able to stimulate them to activity. The larger counties in the District have very active societies. I wish to particularly commend Haywood County, who has twenty-two paid-up members out of a possible twenty-three.

Respectfully submitted,

JULIAN A. MOORE, M.D.,
Councilor of Tenth District.

THE UNIVERSITY OF NORTH CAROLINA

CHAPEL HILL

POST GRADUATE COURSE IN MEDICINE

Greensboro, High Point, and Winston-Salem, N. C.

Time: 7:00 p.m., Dinner; 8:00 p.m., Lecture

GREENSBORO

Jefferson Roof Restaurant

Wednesday, March 2—"Diagnosis and Treatment of Common Diseases of the Gastro-Intestinal Tract," Dr. Walter Alvarez, Mayo Clinic, Rochester Minnesota.

Thursday, March 10—"Diagnosis and Treatment of Syphilis," Dr. Norman R. Ingraham, Jr., University of Pennsylvania, Philadelphia, Pa.

HIGH POINT

Sheraton Hotel

Thursday, March 17—"Diagnosis and Treatment of Acute Abdomen," Dr. E. J. B. Beardsley, Jefferson Medical College, Philadelphia, Pa.

Thursday, March 24—"Diabetes," Dr. Elliott Proctor Joslin, Clinical Professor of Medicine, Harvard University, Boston, Mass.

WINSTON-SALEM

Robert E. Lee Hotel

Thursday, March 31—"Blood Dyscrosis," Dr. Maurice Charles Pincoffs, Professor of Medicine, University of Maryland, Baltimore, Md.

Thursday, April 7—"Nephritis in Adults and Infancy" (lecturer to be announced later).

In some of the counties progress has been made in understanding between organized medicine and county political administrations to the extent of coöperation between them in the care of indigent cases. The year has been one of both scientific and professional advancement.

No matter has arisen requiring the attention of the Councilor for adjustment.

Dr. Long has a telegram he wants to read from the New York State Medical Society.

SECRETARY-TREASURER LONG: "The Medical Society of the State of North Carolina. Greetings and best wishes for successful meeting of the Medical Society of the State of North Carolina. Will you please bring to the attention of your business meeting the fact that the Medical Society of the State of New York is desirous of having the 1940 convention of the American Medical Association held in New York City. We solicit the support of your members of the House of Delegates, and assure your Society we will do everything possible to make the conventin in New York City the most outstanding medical event in American medical history. Regards. C. H. Goodrich, President of the Medical Society of New York State."

PRESIDENT JOHNSON: Gentlemen, you have heard this telegram from Dr. Goodrich, asking to support the claim of New York.

DR. MYERS: Mr. President, I have received some letters—I don't believe I have them here—from Ohio, Illinois, and Pennsylvania, from

the officers of the city medical organizations and the state organizations, as a delegate, and the biggest invitation I ever saw came from Atlantic City. I didn't think it was necessary to put that into the report. So I just mention it to you in connection with the telegram the Secretary read.

President Johnson: Heretofore, we have sent delegates uninstructed, so far as that goes. Unless someone wishes to make a motion we will let it go at that.

Dr. W. Houston Moore (New Hanover): We have been invited by New York City. Weren't the New York delegates the ones who were so strong for socialized medicine? That being so, it seems to me it would be a bad thing to meet on their home ground, where they could muster all the strength possible. (Laughter and applause.)

President Johnson: Gentlemen, we are under the head of new business.

Dr. R. D. McMillan (Robeson County): Mr. President and Members of the House of Delegates: As a delegate from the Robeson Medical Society, I have two resolutions which I want to present to this body. The first one is as follows:

"WHEREAS, the excessive use of the derivatives of barbituric acid is detrimental to the health and safety of the general public; and

"WHEREAS, the use of said drug is becoming more widespread and can be had without any restrictions or instructions as to its use, now therefore be it

"RESOLVED BY THE ROBESON COUNTY MEDICAL SOCIETY:

"1. That the Robeson County Medical Society go on record as opposing the present law permitting the unrestricted retail sale of such drugs and recommend instead an amendment to the Uniform Narcotic Drug Act prohibiting the dispensing or distribution of any drug or any compound, manufacture, salt, derivative, mixture, or preparation of barbituric acid except on the written prescription of a licensed physician, dentist, or veterinarian.

"2. That the delegate from Robeson County Medical Society to the House of Delegates of the State Medical Society be instructed to present these resolutions for adoption by that body.

"3. That the Legislative Committee of the State Medical Society be requested to prepare a bill to be presented to the next session of the General Assembly of North Carolina, which will amend the Uniform Narcotic Drug Act as suggested in Paragraph 1 of these resolutions.

"4. That the Legislative Committee of the State Medical Society, after preparing such a bill, be instructed by that body to put forth its best efforts to see that the bill is properly presented to the next session

of the General Assembly of North Carolina for its careful consideration and passage." (Applause.)

President Johnson: Gentlemen, you have heard this resolution. Is there a motion to adopt this resolution?

Dr. Myers: Mr. President, I would like to make a motion that this resolution be adopted by the House of Delegates of the Medical Society of the State of North Carolina. I think it is very timely. It is a little late. It should have been done years ago.

The motion was duly seconded.

President Johnson: A motion is made and seconded that this resolution be accepted. Is there any discussion? If not, all in favor of the resolution signify by saying "Aye"; opposed, "No." It is unanimously carried.

Dr. McMillan: This is the second resolution:

"WHEREAS, insurance companies carrying insurance under the Workmen's Compensation Act have a policy of designating the physician to treat the injured employee of their assured, thus depriving the injured employee of the right to select his own physician; and

"WHEREAS, this policy of designating the physician makes the physician the employee of the insurance company and, in that way, places such physician in an embarrassing position with reference to an unbiased opinion in matters of litigation, now therefore be it

"RESOLVED BY THE ROBESON COUNTY MEDICAL SOCIETY:

"1. That the Robeson County Medical Society go on record as opposing the policy of the insurance companies designating the physician who shall treat the injured employee of their assured.

"2. That the delegate from Robeson County Medical Society to the House of Delegates of the State Medical Society be instructed to present these resolutions for adoption by this body.

"3. That the Legislative Committee of the State Medical Society be requested to prepare a bill to be presented to the next session of the General Assembly of North Carolina, which will amend the Workmen's Compensation Act by prohibiting any insurance company from designating, either by appointment or otherwise, the physician who shall treat the injured employee of the said insurance company's assured.

"4. That the Legislative Committee of the State Medical Society, after preparing such a bill, be instructed by that body to put forth its best efforts to see that the bill is properly presented to the next session of the General Assembly of North Carolina for its careful consideration and passage."

President Johnson: Gentlemen, you have heard the second resolution of the Robeson County Medical Society. Is there a motion to adopt it?

There was a motion made and seconded that the resolution be adopted.

President Johnson: Is there any discussion?

Dr. Carrington: Isn't there something in the present law which says that nothing in this Act shall be construed to deprive the employee of choosing his physician? That is a thing that this Society and the National Society have always stood for, the free choice of physician by the patient. I am under the impression that the present law provides for that. I am asking for information. I presume that the Robeson County Society investigated that before they offered the motion.

On the previous motion about this barbituric thing, isn't that a matter of Federal narcotics rather than state? These things come up here and we vote on them without discussion or previous knowledge. It seems to me that in matters of this kind it would be wise for us to appoint a committee, such as we have in the National House, to go into these matters and get details before we rush into voting and commit the Society to a stand that may not be entirely defensible or which may have been covered previously.

Dr. Claude B. Williams (Pasquotank-Camden-Currituck-Dare Counties Society): Mr. Chairman, I wonder what is going to be our position before the Legislature as to the matter of barbiturates. The Legislature is very suspicious of physicians, as you all know. Anything we want, they think we have something up our sleeves. When it comes to prescribing something, if we go to the Legislature with a proposition and ask them to pass a law that barbiturates cannot be dispensed except on a physician's prescription, what is our Legislative Committee going to say about it? I didn't hear any argument against this.

President Johnson: That resolution has already been voted upon and passed by the House of Delegates. The resolution we are voting on now concerns—

Dr. Williams: I know that. Dr. Carrington brought that up and I thought our Legislative Committee might be thinking about what they are going to say on that.

About the insurance companies designating their physicians to attend the insured of a company, it may be that Dr. Carrington is right, I don't know. It may be that that is in the law already. I don't remember that it is. However, I think that is going to be done anyhow, no matter what legislation you have. The employer is going to send some physician to the employee. A lot of men at work in the mills don't have a physician.

Secretary-Treasurer Long: I think I can throw a little light on both of these subjects. On the barbituric acid resolution, I introduced in the last Senate a bill covering exactly this resolution, which was backed

by the Legislative Committee of the State Medical Society, and the State Board of Health. That bill passed the Senate. It was killed in the House, there being no member of the House who could properly explain it on the floor. At that, it came very near passing there. I am certain that the present Legislative Committee would back this bill to the limit.

As to the matter of the Workman's Compensation Law, in the original act the employer did have the right to designate the physician. In 1933 I introduced an amendment to that Act, giving the patient the right to the services of the doctor of his choice. That was amended over in the House only, and that provision was left in the hands of the Commission. That is to say, if John Jones breaks his leg and calls in Doctor Houston Moore, unless the Commission says to the contrary, Dr. Houston Moore will treat the patient, regardless of what his employer says about it. The Commission does have the right to change the designated physician. That is the present statute.

I think this resolution is all right. I don't think the Commission should have the right to change the designated physician. That is my idea about it. I have always taken that stand in the Legislature and outside. I may be wrong. That is academic.

Dr. B. J. Lawrence (Wake County): Mr. President, I would like to endorse the spirit of this resolution presented by the Robeson County Medical Society, and the remarks by our Secretary, Dr. Long. He has given you, better than I could, my understanding of that law.

Dr. Carrington, of course, is quite correct in his impression, too, that there was an amendment stating that the injured individual does have the privilege of choosing his own physician.

If I may say it without being misunderstood, in my humble opinion the trouble with this matter is not necessarily with the law, although I think that the bill as passed by the Senate was more desirable from the standpoint of the physicians. I think, however, that the complaint we have from time to time comes from likes and dislikes, and personal preferences by the insurance companies. It is a fact, in my opinion, that the Commission did reserve the right to call in a consultant if they so desired over and above the right and wish of the physician. But I doubt if that has been done very often in practice.

However, it is my further impression that in spite of the law, and in spite of the amendment which was engineered through for us, the core of thought behind the resolution of the Robeson County Medical Society is a reality. I doubt if those people are being permitted to make that choice. Of course, I understand that these placards are displayed and that they are making the choice for them, in spite of the law. I can easily understand what my friend is driving at, and what his able County Medical Society has in mind. I am thoroughly for the spirit of that resolution, and if a bill can be drawn by the new Legislative Committee which will clarify that and fix it so that the employer and

the insurance carrier cannot browbeat the employee into that, I believe that it will be a very fine thing for the profession and for the individual employee.

I hope that the House of Delegates will see fit to pass this resolution of the Robeson County Medical Society. (Applause.)

President Johnson: Is there further discussion? If not, all in favor of the resolution make it known by saying "Aye"; opposed, "No." It is adopted. The Legislative Committee will take notice.

Is there any other new business to come up?

Dr. W. R. Stanford (Durham County): I wish the Committee would consider bromides while they are considering barbiturates. I think they are more harmful than the barbiturates.

President Johnson: Is there anything else to come up under the head of new business?

Dr. Lawrence: Mr. President, if there is nothing else pressing, may I address just a few remarks to the thought expressed by my friend from Durham?

This is a very serious matter. I have never been a member of the Legislature, but I have watched it in and out. I am not even on the Legislative Committee now.

Our Secretary has served in both House and Senate, and I think he will bear testimony to what I shall say. It is all very well and good to say that you want the Committee to draw a bill that will include barbiturates, and then include bromides and so on. We all smile about that, but we meet up against a very stern matter when we go to the Legislature with a bill like that. Some of the most distinguished and eminent members of the committee will stand up, about the time you have fixed the vote on it, and say, "Look here, the doctors are going to fix it so I can't go across to this drug store and get a bromide. The next thing I know, they will have it so I can't get a Coca-Cola."

That brings us back to the same matter which has been presented on the floor of the House of Delegates time and again: Until we can get some doctors—more than one or two—into the Legislature, both House and Senate, we will be seriously handicapped in an attempt to pass any sort of legislation of this kind or character. All we need to do is just to start talking about this and we will put amytal in next. That is a barbiturate, my friend reminds me. (Laughter.)

Dr. A. L. Daughtridge (Edgecombe-Nash): I am going to bring up something in reference to our meeting of last year. I am sure that all of you received a questionnaire in some form from our good Secretary to the effect that the Medical Society of North Carolina, instead of remaining in the state, take a cruise to Bermuda for our next meeting.

I would like to say in this respect that I have been on one cruise

taken by an organization—not a medical society—and I am contemplating going with the bankers on their meeting in June. All I can say is that it is one of the most delightful forms of meeting that you can have. You really have the members where you can make them attend meetings. On the meetings I have attended, and from talking to people who have attended other meetings, the people who conduct the tours are always very coöperative. They exert themselves to give you a good time. They have a good menu, a good program, and it is something that every man in the state can go to and enjoy.

It brings in quite a few problems, because it does take you away from your work for longer than the customary three days of our state meetings. The cruise contemplated will possibly take seven days.

I would like to bring this up before the House of Delegates for their consideration. To bring it before the House, I move you, sir, that the Medical Society of North Carolina have its next annual meeting in the form of a cruise.

The motion was duly seconded.

Dr. James H. McNeill (Wilkes-Alleghany): Our county is about as far from the seacoast as any of them. It is probably between 400 and 500 miles from our county to the port of departure. However, I have talked, personally, with each member of our Society, and they all favor it. I think that our friend's point that it takes you away from work for more than three days is probably the greatest talking point for the trip. The idea of getting on a boat, away from the telephone and away from the office is a very fascinating thing, and therefore I arise to second that motion.

President Johnson: Gentlemen, you have heard the motion made and seconded that the Society have its next meeting in the form of a cruise. Is there any further discussion?

Secretary-Treasurer Long: Dr. Daughtridge intimated that I engineered the questionnaire that was sent out to all the members of the Society. I did it at the request of a number of physicians in the state to ascertain the feeling about it for this meeting. The replies on it were: favorable, 643; against, 91, making a total of 734 replies. Of the 643 who voted in favor of the tour, who wanted to go on the cruise, certainly 400 of them stated that members of their families would go with them, and of the 91 who said they were not in favor of it, there were four, I recall, who said that if we went on the cruise, they were going to go and carry their families with them.

Dr. G. G. Dixon (Greene): The questionnaire that was sent out, I think, designated Norfolk, Virginia, as the point of embarkation. I wonder if that couldn't be made a North Carolina port. It would mean an average of one hundred miles less driving for most of us than would be necessary if we were to embark from Norfolk.

Dr. Bulluck (New Hanover): We have a port in North Carolina that is capable of handling the *Reliance,* and a river depth that is sufficient. We certainly hope that Wilmington will be considered as the place of departure.

While we have a nice state above us, in lots of ways we are better. We certainly have a port that is equal to any in the State of Virginia and we submit that you should consider the port of Wilmington.

Dr. W. Houston Moore (New Hanover): As a Wilmingtonian, naturally, I want Wilmington selected as the port of embarkation. This is a North Carolina Medical Society. I don't think we will be true North Carolinians if we select a Virginia port to sail from, when we have a port in our own state that is amply able to take care of our requirements in that line. The port of Wilmington will accommodate any boat that we could select to take out on the trip.

Dr. Ben F. Royal (Morehead City): Not in competition with, but in comparison with my friends from Wilmington, I would like to state that there are two possibilities for the *Reliance* leaving a North Carolina port. I have no idea of entering into a statistical comparison of the two North Carolina ports, but I do here and now want to state that it is utter folly for six or seven hundred good North Carolinians to pay tribute to Virginia, to go across this valley of humility into that mountain of conceit, in order to take their departure on this cruise.

I want to say that if and when the time comes for the Medical Society of the State of North Carolina to take a cruise, there are North Carolina ports available as a point of departure. (Applause.)

Dr. Ben Lawrence (Wake): Mr. President, as a North Carolinian who doesn't live in Morehead City or Wilmington, but who claims many friends in both places, I want to say that I am in thorough accord with the spirit expressed by these gentlemen, and I would like to move you, sir, that the President and the Secretary be authorized to appoint a committee to take up this particular matter and to name or designate a place in North Carolina, if it is physically possible to do so, from which we can leave, rather than leaving from a Virginia port. (Applause.)

The motion was duly seconded.

President Johnson: You have heard the motion.

You wish to amend the motion that we go on a cruise by providing that we start from a North Carolina port?

Dr. Lawrence: My motion was predicated upon the fact that the House of Delegates was going to pass that motion which has been offered. Of course, if the House of Delegates does not see fit to approve that motion, then my motion would have no purpose.

Dr. F. M. Houser (Gaston): Mr. President, I am of the opinion that there is a member of the steamship company present who might give us

some definite information about the *Reliance.* I would suggest that we give him the privilege of the floor to explain about that.

President Johnson: We will ask Mr. Allen to tell us about that, if he knows.

Mr. Harrison Allen: I am very sorry we cannot go into Morehead City, because of physical conditions. We went into that twice, when the Bankers' Association and the Bar Association were planning their cruises. At Morehead City, the entrance to the harbor is entirely surrounded by lowlands. The wind blows quite strongly across there, so that it is impossible to navigate a ship of that size into the channel.

At Wilmington, there are no tugs available, except the Coast Guard's, and we cannot depend on them. In case of an emergency they would not be available, and we would have to bring the tugs from Norfolk, which would cost $1,800.

There was further informal discussion between Mr. Allen and the various doctors along this line.

Dr. Bulluck (New Hanover): I want to say that I took this trip with the Virginia Medical Society about two years ago, and it was the most delightful one I have ever been on. As for the courtesy and entertainment, nothing could be desired of Mr. Allen's line. If we do decide to take such a trip, I know it will be a lingering delight to every man and his family who goes on it.

Dr. E. A. Livingston (Scotland): I move we sail from a Carolina port. (Laughter.)

Dr. W. Houston Moore (New Hanover): If the *Reliance* can't take us, let us get a ship that can take us from a North Carolina port.

Dr. Dixon: If there is no North Carolina port available to accommodate the ship, I personally think we should be willing to sacrifice some of our state pride, in order to facilitate things, because the trip is such a nice one.

I thoroughly agree with the gentlemen from Wilmington and the other seaport towns, that if it were practicable, a North Carolina port should be used, but I think the trip is such a good one that we ought to be willing to sacrifice a little bit of our state pride in order to get the trip.

Dr. W. J. Lackey (Cleveland): Mr. President, I think this trip is a fine idea. I don't know which port would be the best one to sail from, but whichever it is, I think we ought to take the trip. I would therefore like to amend the motion that we go to Bermuda and, as there may be some points in connection with the trip that most of us don't understand, a committee consisting of the President and the Secretary be authorized to work out the details.

The motion was duly seconded.

President Johnson: The first thing to do would be to decide whether we want to take the cruise or not.

There were calls for the question.

President Johnson: The motion before the house is that our next meeting be in the form of a cruise to Bermuda. If there is no further discussion, all those in favor of this motion make it known by saying, "Aye"; opposed, "No." The motion is unanimously carried.

There have been two other motions made, which are practically the same—Dr. Lawrence's motion and Dr. Lackey's motion.

Dr. Ben Lawrence (Wake): I am perfectly willing to withdraw my motion in favor of Dr. Lackey's. It is practically the same, namely, that you appoint a committee to confer with the President and Secretary to work out the details of this matter, whatever they may be.

President Johnson: We have Dr. Lackey's motion before the house, which is practically the same as Dr. Lawrence's: that the matter be left to the President and Secretary to decide these details. Is there any discussion of this motion? If not, all in favor make it known by saying, "Aye"; opposed, "No." It is carried.

Secretary-Treasurer Long: At the request of the President, I am reminded of what I once heard Dr. Cyrus Thompson say at a meeting of the Seaboard Medical Society in Norfolk, when he was called on. He said he always liked to come to Norfolk because he regarded it as the best town in North Carolina. (Laughter.) Nearly half of its population are natives of this state.

I am not in favor of Norfolk. As I wrote the Chamber of Commerce in Wilmington, I am for North Carolina first, last, and all the time. Mr. Allen may be right in what he says, and he may be wrong. My two good friends here from Wilmington and Morehead may both be right, and they may both be wrong. I don't know. But we will endeavor, as your committee, to work out what is the safest thing for this great group, to take care of the lives and safety of our people. If it is dangerous to go from Morehead or Wilmington, God knows, I don't want to go from there. (Laughter.)

Dr. H. D. Walker: Mr. Chairman, I don't know where the ship is coming from, but may I make this suggestion: those who want to get on at Norfolk, let them get on there; those who want to get on at some other port, in North Carolina, let them get on there, if we are stopping at two places.

President Johnson: Is there any other new business?

Dr. C. F. Strosnider (Wayne): I move we adjourn.

The motion was duly seconded, put to a vote, and carried. The meeting thereupon adjourned at 11:00 o'clock p.m.

WEDNESDAY AFTERNOON SESSION

May 4, 1938

The meeting convened at 3:35 o'clock, President Johnson presiding.

President Johnson: Gentlemen, the House of Delegates will come to order.

The first thing on the order of business is the report of the Nominating Committee.

Dr. Highsmith!

Dr. Highsmith: We had a regular meeting of the Nominating Committee which was called to order by Dr. George W. Mitchell, Dr. J. F. Hihgsmith was elected chairman, and Dr. Clyde R. Hedrick was elected Secretary.

The name of Dr. William Allan of Charlotte was placed in nomination as President-elect, and he was unanimously nominated as our next President.

Dr. Claude Williams of Elizabeth City was the nominee as First Vice President.

Dr. M. D. Hill of Raleigh was named as Second Vice President.

State Board of Nurse Examiners: Dr. T. C. Johnson of Lumberton was nominated.

Delegates to the American Medical Association: Dr. T. W. M. Long, alternate, and Dr. Wingate Johnson, alternate.

Delegates to the Virginia Medical Association: Dr. F. H. Gariss, Dr. W. G. Suiter, Dr. B. M. Nicholson, and Dr. Paul E. Whitaker.

Delegates to the South Carolina Medical Association: Dr. L. N. Glenn, Dr. John Q. Myers, and Dr. W. D. James.

Medical Society Foundation: Dr. Martin L. Stevens to replace Dr. C. C. Orr, of Asheville.

Obituary Committee: Dr. J. B. Cranmer, Chairman; Dr. J. F. Abel, and Dr. Ben Lawrence.

Legislative Committee: Dr. Hubert B. Haywood, Chairman; Dr. Donnell B. Cobb, and Dr. George L. Carrington.

Moore County Medical Society Medal: Dr. J. S. Milliken, Chairman; Dr. Thurman D. Kitchin, and Dr. I. H. Manning.

Hospitals: Dr. W. D. James, Chairman; Dr. J. B. Whitington, and W. I. Wooten.

Cancer: Dr. H. B. Ivey, Chairman; Dr. C. C. Carpenter, and Dr. Thomas L. Lee.

Public Relations: Dr. D. W. Holt, Chairman; Dr. T. W. M. Long, and Dr. P. P. McCain.

Advisory to the Industrial Commission: Dr. Battle A. Hocutt, Chairman; Dr. W. G. Suiter, and Dr. J. F. Highsmith, Jr.

Finance: Dr. Vance Peery, Chairman; Dr. Westbrook Murphy, and Dr. W. M. Coppridge.

Printing: Dr. T. W. M. Long, Chairman; Dr. B. C. Willis, and Dr. E. C. Judd.

Post-graduate Medical Study: Dr. Paul H. Ringer, Chairman; Dr. James W. Vernon, and Dr. William H. Smith.

Advisory Committee on Maternity and Infancy, Children's Bureau: Dr. W. C. Davison.

Syphilis Control: Dr. J. C. Knox, Chairman; Dr. Louis C. Skinner, and Dr. Hamilton W. McKay.

Advisory to the Women's Auxiliary: Dr. Verne S. Caviness, Chairman; Dr. W. T. Rainey, and Dr. I. T. Mann.

Social Security: Dr. Forest M. Houser, Chairman; Dr. T. W. M. Long, Dr. Paul H. Ringer, Dr. W. C. Bostic, Dr. T. G. Upchurch, Dr. B. J. Lawrence, Dr. Paul F. Whitaker, Dr. M. P. Whichard; Dr. D. W. Holt, Dr. George L. Carrington, and Dr. Thomas L. Carter.

To Study Third- and Fourth-year Medical School: Dr. C. F. Strosnider, Chairman; Dr. Ben J. Lawrence; Dr. James W. Vernon, Dr. K. B. Pace, Dr. T. W. M. Long, Dr. Hubert B. Haywood, Dr. W. D. James, Dr. C. C. Carpenter, and Dr. William deB. MacNider.

Charlotte, North Carolina, was suggested as the place for the next meeting in the event the cruise to Bermuda does not materialize.

The report is signed by J. F. Highsmith, Chairman, and C. R. Hedrick, Secretary.

Thank you.

President Johnson: Gentlemen, you have heard the report of the Nominating Committee. Are there any corrections? If not, a motion is in order to accept or reject the report.

Dr. James W. Vernon: I move the report of the Nominating Committee be accepted.

The motion was duly seconded.

President Johnson: There is a motion made and seconded that we accept the report of the Nominating Committee. All in favor make it known by saying "Aye"; opposed, "No." The motion is carried.

Is there any unfinished business to come before the House?

Secretary-Treasurer Long: There is no unfinished business.

President Johnson: Is there any new business? If not, a motion is in order to adjourn until 5:30 this afternoon, when we will have the last General Session, after the sectional meetings are over.

There was a motion duly made and seconded that the meeting adjourn.

President Johnson: All in favor of the motion make it known by saying "Aye"; opposed, "No." The meeting stands adjourned.

The meeting thereupon adjourned at 3:50 o'clock.

PROCEEDINGS

EIGHTY-FIFTH ANNUAL SESSION

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

PINEHURST, NORTH CAROLINA

MAY 2-4, 1938

FIRST GENERAL SESSION

TUESDAY MORNING, MAY 3, 1938

The First General Session of the Eighty-fifth Annual Meeting of the Medical Society of the State of North Carolina convened at 9:50 o'clock at The Carolina, Pinehurst, North Carolina. Secretary-Treasurer Long called the meeting to order.

SECRETARY-TREASURER LONG: The Eighty-fifth Annual Convention of the Medical Society of the State of North Carolina is now in session.

I wish to announce that there will be a meeting of the Board of Directors of the North Carolina Tuberculosis Association in the Dutch Room at 12 o'clock today.

The Society has a letter here from Dr. Karl Schaffle of Asheville asking us to make a statement to the effect that the Second Annual Tuberculosis Seminar will be held in Asheville the second week in July. The fee will be ten dollars and the number of physicians to take the course will be limited to twenty. Those who attended last year were very enthusiastic and are anxious to return.

At the registration desk is a book sent by Doctor Schaffle for those who would care to register for this course.

At 1 p.m. the Alumni Association of the University of North Carolina will have a luncheon in the Crystal Room. At the same hour, at 1 p.m., in the main dining room, the Jefferson Medical College Alumni Association will have a luncheon meeting with an address by Dr. Edward A. Strecker, Professor of the School of Medicine of the University of Pennsylvania.

Tonight at 7 p.m. the Alumni of Wake Forest will have dinner in the Crystal Room.

Announcements.

President Johnson assumed the Chair at this point.

President Johnson then presented his prepared address, making the following interpolation before the words, "One of the glories of the medical profession," on page 66: Just to digress there for a minute, Dr.

Rousseau at the City Hospital at home, in collaboration with Dr. Pepper, has been doing some work the last two or three months in treating pneumonias with X-ray. Dr. Rousseau expects to publish his observations later, but he authorized me to say that the last statistics show that out of forty-three cases treated, eight bronchopneumonias, the rest lobar, there has been one death. In a sort of control for the two months before that at the City Hospital, of twenty-eight service cases treated, there were twelve deaths.

President Johnson then concluded the reading of his prepared paper. (Applause).

PRESIDENTIAL ADDRESS

Introduction

Members of the North Carolina State Medical Society, Members of the Woman's Auxiliary, and Guests:

It is with a feeling of deep gratitude to the doctors of North Carolina that I greet you this morning: gratitude for the honor of being your President, gratitude for the multitude of courtesies shown me during the past year in my travels over the state, and gratitude for the numerous ways in which you have manifested your loyalty and made me feel that you had faith in me.

In thinking over a theme for my presidential address, I have sought one that would be both practical and inspirational, yet would have the widest possible appeal. The one finally selected was the first one that came into my mind a year ago. Although a number of others were considered, it refused to be crowded out, but persistently held first place. This theme is "Clinical Research in Private Practice." I sincerely hope that its tenacity is not its chief merit.

CLINICAL RESEARCH IN PRIVATE PRACTICE

By Wingate M. Johnson, M.D.
Winston-Salem, N. C.

"Let your light so shine before men, that they may see your good works." (Matthew 5:16.)

A recent book by Stuart Chase has a most fascinating title—"The Tyranny of Words." The very name is enough to stimulate endless reflection as to how almost everybody, no matter how intelligent, is influenced, if not dominated, by the meaning attached to certain words or phrases. How contradictory may be one's reactions to different terms with virtually the same meanings! For example, it makes all the difference whether a woman is called "slender" or "skinny," "fat" or "pleasingly plump"; whether a man is called "generous" or "spendthrift," "thrifty" or "stingy," "conservative" or "a moss back reactionary,"

"liberal" or "radical"; whether he is said to have "the courage of his convictions" or to be "as stubborn as a mule." A college student does not mind being told he has the power of concentration, but resents being called a "dig" or "grind." No doubt the central character in the Bible's best known parable was often flattered, so long as his money lasted, by the ancient equivalent of "He's a Jolly Good Fellow," before he was immortalized as the Prodigal Son.

To most doctors, doubtless the first and most important meaning of the word "research" is work done in a great laboratory with thousands of dollars worth of apparatus. The second idea suggested is a large hospital, with hundreds of patients separated into two great groups labeled "test" and "control." Perhaps a third conception is some such project as was recently completed by the United States Public Health Service, aided by one of the alphabetical arrangements of the federal government, in which a survey of nearly 800,000 families in the nation was made in order to find out what any intelligent high school student could have predicted—that there was more sickness in the families on relief and with anual incomes of less than $1,000 than in the upper income group. Apparently the conclusion was reached—which the same high school student would know is erroneous—that the only remedy needed is to have as many doctors' visits made to the low income group as to those in the higher brackets. While this conclusion is extremely flattering to our profession, none know better than we how sadly this low-income group needs sufficient food and warm clothing and adequate houses and fuel even more than it needs doctors' visits.

The average family doctor is likely to be so overawed by the majesty of the word "research" that he refuses to entertain for a moment the thought that he himself is capable of doing it while engaged in active practice. In truth, however, he is in a better position to do clinical research because he is in practice. Instead of working with rats, rabbits, and guinea pigs, he has at hand the finest material in the world to use for study—the human beings who come to him for treatment. One can carry on one bit of investigation after another, or work on a number of problems together, and do better work for having a stimulating new interest added to the daily routine of practice. An utterly false conception of research is that it makes a man cold, heartless, and indifferent to human suffering.

Before we tamely submit to the tyranny of the fearsome word "research," let us see just what it does mean. According to the *Standard Dictionary,* Webster concurring, it means "diligent protracted investigation, especially for the purpose of adding to human knowledge; studious inquiry." "Clinical," of course, is derived from the Greek word "klinikos," meaning "of a bed," with a second less aristocratic choice of ancestry in the Low Latin "clinicus," meaning "bed-ridden person." Our title, then, means "a studious inquiry of bed-ridden (or sick) people."

Certainly every general practioner worth his salt does just that every day of the week, including Sunday. It is the first part of the definition that may be forbidding at first glance; but closer inspection should make us feel more kindly toward it. Surely every doctor with a puzzling professional problem in the form of a serious, long drawn out illness, will make "diligent protracted investigation" into the cause and (if possible) cure of his patient. When he has found the answer, if his experience will help other doctors solve similar problems, of course he will want to share his knowledge with his colleagues by telling them about it—thereby "adding to human knowledge" and engaging in "research" unawares. If, instead of a single patient studied intensively, a series of similar cases offers an opportunity to compare different methods of treatment, or to evaluate a new remedy, a statistical study forms the basis for research of a different sort, but also valuable. Then, if the doctor extends his audience from a few friends to the county, district, or state society, or a medical journal—or both—he is indeed "adding to human knowledge." Any one who has ever done any bit of investigation knows that he himself profits more than anybody else. It is almost, if not quite, an invariable rule that he who tries to teach others will learn far more than he will teach.

I wish that every doctor in North Carolina could have heard Dr. Milton J. Rosenau's address to the State Public Health Association last year, on "Serendipity." Let me hasten to explain that Serendip was the name that Marco Polo gave Ceylon, and that Dr. Rosenau got his title from a fairy story of three princes of Serendip who "went about the world seeking adventure and making discoveries, by accident and sagacity, of things they were not in search of."

The doctor who carries into the practice of medicine something of Serendipity will be repaid many times over; but he should also remember and absorb the famous saying of Pasteur, "Chance favors the prepared mind," and have his mental antennae tuned to catch any important message that may come his way. It was the prepared mind and the spirit of Serendipity that enabled Ambroise Paré to forsake the brutal method of dressing gunshot wounds with boiling oil; that made William Withering learn from an old woman the value of digitalis; that impelled John Hunter to do his pioneer work in surgical pathology and to elevate surgery from a trade to a profession; that gave to us through Jenner vaccination against smallpox; that caused William Beaumont to turn a French-Canadian's gunshot wound into an opportunity to study the physiology of gastric digestion; that led Crawford W. Long to use ether for anesthesia; that made Oliver W. Holmes and Semmelweiss grasp the true explanation for childbed fever; that inspired Pasteur in his many brilliant discoveries; that gave Koch his triumphant discovery of the tubercle bacillus; that opened Roentgen's eyes to the wonderful possibilities in a Crookes tube. Coming to more modern times, the prepared

mind of George Minot found a cure for pernicious anemia; Banting's isolated insulin; Von Jauregg's recognized the value of malarial paroxysms in paresis; our own William MacNider's has made him an international authority on the kidney; our own David Smith's has taught us to treat pellagra and staphyloccus septicemia.

The family doctor in the small town or rural district has at least one distinct advantage over the hospital worker: his practice is a much more stable one, and it is easier to follow up his cases and so evaluate the results of treatment. His patients are also apt to be more intelligent and so more coöperative than are those who come to the wards and dispensaries of a great hospital. Those who have heard Dr. Walter C. Alvarez talk must have been impressed by the emphasis he places upon the use of one's five natural senses, plus the priceless ingredient of common sense. Moreover, while the country doctor may not have the elaborate facilities of a great laboratory, he should have a few test tubes, a Bunsen burner or alcohol lamp, a microscope, a blood counting apparatus, glass slides, a few stains and the chemical reagents required to make the simple tests often needed to confirm a clinical diagnosis. Wassermann tubes are to be had for the asking, and the State laboratory sends reports promptly—not only on Wassermanns, but also on typhoid, undulant fever, and other serological examinations.

With such aids to an adequately taken history and a complete physical examination, the family doctor should be able to diagnose and treat most of his patients himself, and to know when the help of a surgeon or specialist is needed. Then if he will train himself from the beginning to keep records of his patients, he will be laying the foundation for one piece of research after another. The habit of keeping in mind for study some problem, or even several problems, adds immeasurably to the zest of practice. It gives the spice of adventure to what may otherwise become deadening routine. Furthermore, the answer to a hard professional riddle may be found because one has the riddle in mind. Only too many of us are like the negro who, when something was explained in terms he could understand, exclaimed, "Why, I never thought to think about that." Recently a brilliant research worker in physics said that when any important discovery in physics is announced, it is at once tried out in their laboratory. Almost invariably they find it easily duplicated with their apparatus. All that was necessary was the thought to think about it. The same thing could be said of many, if not most, great medical discoveries.

Oliver Wendell Holmes said that in Paris he learned three things from the great Louis: "Not to take authority when I can have facts, not to guess when I can know, and not to think a man must take physic because he is sick." These three principles are to be commended to every doctor as essential for true clinical research. Certainly no one should be satisfied to guess at the answer to any problem when it is possible to know—even though the solution requires some effort. And no matter

how much any man may tower above his colleagues, his mere prestige does not make him infallible. The tremendous weight of Galen's authority kept the medical profession in the Dark Ages for more than a thousand years. But for the great force of Dupuytren's name—coupled, it must be confessed, with his brutality—appendicitis might have been recognized as a clinical entity when Melier first described it in 1827 nearly sixty years before Reginald Fitz's classic description of it was published. Fortunately the great Pasteur, in spite of his gentle nature, had enough native resolution under the surface successfully to oppose the die-hard authorities of his day, and so to deserve the honor of fathering modern medicine.

Now, happily, while any new work is subject to keenly critical evaluation, we do not see the savage assaults upon all new ideas, nor the jealous distrust of the younger members of the profession that prevailed in the days of Dupuytren and Pasteur. It is fortunate that new methods of diagnosis and treatment do have to run the gantlet of critical study for thereby is the public protected from excessive enthusiasm, which Da Costa once said is "as dangerous as prejudice." It is true, however, that never in the world's history has the medical profession been so quick to assimilate and utilize new knowledge. In an incredibly short time, sulphanilamid has made a large place for itself. Just as soon as it could be standardized and placed on the market, insulin was being used all over the world. The value of liver in the treatment of pernicious anemia was speedily reflected in the soaring price of that hitherto humble article of diet. The serum treatment of pneumonia is being widely used; and there is great interest in the exciting possibility that the X-ray may prove just as effective and far less taxing to the patient, physically as well as financially.

One of the glories of the medical profession is that its members have no trade secrets. When any doctor, no matter whether a professor in a great medical school or a general practioner in an obscure rural section, makes a discovery that may benefit humanity, it is his duty to acquaint other doctors with it. With the multitude of medical journals now published, there is no valid excuse for any man to withhold any information he may have, in return for what he learns from others. The two chief deterrents are false modesty and laziness.

Those who have read Marion Sim's fascinating story of his own life will recall his experience with his first published case report. He had operated for a double harelip and obtained such a remarkable result that a dental friend begged him to write a description for the *Journal of Dental Surgery*. When Sims objected that he had never written anything in his life, the dentist gave him the excellent advice, "Write it as you would talk it, or as you have told it to me." When the *Journal* with his article came, it was hidden behind some large books in his office. To his great dismay, some months later Dr. Ames, the leading practitioner

of Montgomery and the most prolific writer, while on a social visit walked over to the bookcase, took down the volume that hid the Dental Journal, pulled it from its hiding place and began turning its leaves. Now let Dr. Sims tell the story:

"I said to myself, 'My God!' if he goes on in this way, he will come to the article on the 'Lowndes County Girl's Harelip', and he will give me fits. I was trembling like a leaf, as I stood there like a schoolboy. Still he stood there, turning over leaf after leaf, and, when he got to where the case was described, he did not look up at all, or say a word, but stood there, reading it down on the first page, then on the other page, deliberately reading it through. It just occupied two pages. My heart was in my throat. As he finished the article he stood perfectly still, and I also stood perfectly still, trembling. As he turned around I thought, 'I shall get it now'.

"In a moment he said, 'What would I give if I had the faculty of expressing myself in writing like that?' "

No doubt Dr. Sims was quite sincere in his description of the agony of embarrassment he suffered; yet he was well repaid by the commendation of his colleague. A far higher reward, however, was the feeling that he had added to human knowledge.

In contrast, let me tell a story of how a country doctor narrowly missed fame and—far more important—an opportunity to save thousands of children's lives. Last summer a loquacious old lady, well past three score and ten, told me that her old family physician, a Dr. Anderson, who died some years ago in Iredell County, lost his first baby of cholera infantum. When his next child reached the second summer, it developed the same ailment, was desperately ill for a few days, then began improving. One day he came upon the baby's old colored nurse feeding it scraped apple. He began to berate her soundly, asking why she wanted to kill this baby after he had already lost his firstborn. "Well, doctor," she replied, when he paused for breath, "your baby is getting better, isn't it?" When he admitted that it was, she continued, "That's because I've been feeding it scraped apple. If you want it to get well, please let me keep on." Grudgingly he had to admit the force of her argument, and agreed for her to go on with the treatment. Within a few days the baby was well, and so long as he lived thereafter the good doctor used scraped apple regularly and successfully in diarrhea and dysentery. This was forty years before Birnberg published his first report in America of this now famous therapy. It is highly probable that Dr. Anderson's sense of modesty kept him from asking for a place on his medical society program or writing a report for a medical journal, in order to acquaint the world with his life-saving discovery; yet it was his duty to do so. He failed to obey the Scriptural command, "Let your light so shine before men, that they may see your good works."

Laziness, I fear, is responsible for more sins of omission in recording our observations than is modesty; and by a process of rationalization it is easy to deceive oneself into thinking he is too modest to write when he is really too lazy. Every one who does any writing, even on a small scale, knows it is hard work; yet its difficulty is often exaggerated. The story is told of a cub reported who had uncovered his first big story but was afraid he could not do justice to its news value. As he sat before his typewriter mopping his brow, a veteran noted his plight, walked over and patting him on the shoulder said, "All you have to do, son, is to put down one little word after another." With a story to tell, any man with enough knowledge of the English language to get a medical diploma should be able to write it. The veteran reporter's wisdom was shown when he used the adjective "little" before "word." Oliver Wendell Holmes has aptly said, "Never use a long word where a short one will serve the purpose. I know there are professors in this country who always 'ligate' arteries. Other surgeons only tie them, and it stops the bleeding just as well."

Soon after the "Life and Letters of Walter H. Page" was published, a friend gave me a copy at Christmas. While reading it, my six-year-old daughter came up behind me. She had been in the first grade four months, and was anxious to use her new knowledge. "Daddy," she said, "let me see what I can read." For curiosity, I made a rough estimate of what she could understand, and was surprised to find that she recognized about 70 per cent of the words used in one of Page's letters. I am not telling this story to show that I am the father of a child prodigy—God forbid!—but as proof that one of the world's greatest scholars ordinarily used words so simple that a first grade pupil could understand most of them. It helps us to clarify our own thoughts if we clothe them in the simplest language possible—and certainly it will help our readers to grasp them.

It is fortunate for many generations of his students as well as for his patients that the master clinician and teacher, David Riesman, outgrew a youthful notion thus charmingly described by him: "A good many years ago a friend and I were . . . discussing the physical diagnosis of the heart. In our youthful ignorance we agreed . . . that it was a closed chapter, that all was known that ever could be known, and we had best devote our untapped energies in physical diagnosis to some other branch of medicine if we wanted to make discoveries. Little did we think that in a small provincial town in England a man at that very moment was blazing a new path in cardiac diagnosis, and that his work was to revolutionize a subject we believed to be perfect and unchangeable."

Going much further back, in 1829 Andral wrote: "Since the publication of the immortal researches of Corvisart, and of numerous other works subsequent to his, which have still further enlarged the dominion of

science, the history of diseases of the heart and its membranes is to be regarded as almost complete."

To any one who may feel that there is no further need for research, it is only necessary to suggest a few unsolved problems waiting for some Jenner, Pasteur, Banting or Minot: arthritis, asthma, hay fever, urticaria, migraine, epilepsy, peptic ulcer, spastic colitis, the common cold, sinusitis, granulopenia, essential hypertension, coronary heart disease, nephritis, ureteral stricture, encephalitis, much mental disease —and only too many others.

Doubtless the answer to many of our problems is as simple as was the liver treatment of pernicious anemia, or the malarial treatment of paresis; yet it may be years before many of them will be solved. Others will require long, patient, and persistent effort, in which some bit of keen observation by one of you may be as essential as the keystone to an arch. While occasionally an important discovery may be made by a brilliant flash of inspiration, far more are made by patient repetition of trial and error. Even the best will have more errors than successes; but the errors are soon forgotten while the successes are remembered. "We learn wisdom from failure much more than from success. We often discover what *will* do, by finding out what will not do; and probably he who never made a mistake never made a discovery." (Samuel Smiles)

The classic modern example of clinical research by a general practitioner is, of course, Sir James Mackenzie. Soon after entering practice in the little Scotch village of Burnley he lost a young woman in childbirth from sudden heart failure. This harrowing experience made him resolve to learn all he could about heart disease, so that, if possible, he could avoid another such tragedy in the future. Finding little help in the literature available he began studying his patients themselves. For a score of years he kept accurate histories of all with cardiac irregularities. In order to record graphically the various types of pulse beats, he devised a crude but effective instrument for making pulse tracings on strips of smoked paper fastened to a revolving drum—a modification of the old Dudgeon Sphygmograph, which he called the Ink Polygraph. At the end of twenty years he could say with authority which types of irregularity were dangerous and which were not. Then he began to publish the results of his study. First came a modest little volume called "The Study of the Pulse." Later he moved to London and published his monumental work, "Diseases of the Heart." He was literally forced into becoming a heart specialist, and before his death was generally recognized as the man who had added more to our knowledge of the heart than any man since Harvey discovered the circulation.

Mackenzie had the great advantage, which he often emphasized, that he could follow his cases for periods of time impossible to those depending for clinical material upon the floating population of a hos-

pital, or upon the more unstable clientele of a city practitioner. He also often stressed the point that one could far more intelligently study one particular organ if he were familiar with the functions of the whole body.

Sir James used the same methods as did Hippocrates, who four centuries before Christ placed medicine on the highest plane it was to occupy until modern times. Instead of wasting his energy in useless speculation, Hippocrates studied every patient, recorded his observations, and compared results. It is an intriguing, though futile, speculation as to how many lives might have been saved had the medical profession followed his sane leadership instead of accepting as inspired the dogmatic statements of Galen. The really modern scientific method of observation taught and practiced by Hippocrates was forgotten in the blind worship of Galen's authority, and millions of lives were sacrificed upon this altar.

One of the finest examples of surgical research by a general practitioner was J. Marion Sims. His prepared mind made one brilliant discovery after another; but his greatest "diligent protracted investigation for the purpose of adding to human knowledge" was learning to cure vesico-vaginal fistula. While busy with a large general practice, he used all his spare time for four years in repeated operations upon a few Negro slaves whom he kept at his own expense. One method after another failed. When his colleagues grew tired of assisting him, he trained the patients themselves to help. At length his family and friends begged him to give up a senseless undertaking before it ruined his practice and wasted all his financial resources. He persisted, however, and at long last the thirtieth operation on the Negro Anarcha was successful. In rapid succession others were cured of this distressing malady, and the foundation for Sims's world-wide fame was laid. Years later he traveled abroad in a veritable triumphal march, operating in some of the most famous hospitals and on some of the most famous patients in Europe. He and other apparently tireless workers verify Matthew Arnold's definition of genius as "mainly an affair of energy"; and the observation of Sir Joshua Reynolds, that "If you have genius, industry will improve it; if you have none, industry will supply its place."

The temptation is to multiply examples, but time marches on, and these are enough. I should like to tell of the numbers of papers read at various district meetings during the past year that showed the spirit of research. Some of the best came from small towns and rural communities. Rather than run the risk of discrimination, I shall not mention any by name. As I have frequently said elsewhere, the past year has been one of the most profitable of my life, in that my travels over the state have afforded a continuous post-graduate course. Judging by the uniformly high order of the papers read in every district, the intelligence of the discussions, the eagerness of those attending the post-

graduate courses, and the spirit of research showed to many of our men, the health of the people of North Carolina is in good hands.

Secretary-Treasurer Long: The next item on the program, ladies and gentlemen, is the presentation of the President's Jewel to the outgoing president. President-elect Sidbury will present the jewel to Dr. Johnson.

President-elect Sidbury: Mr. Secretary, Members of the Medical Society of the State of North Carolina: It gives me a great deal of pleasure to represent you in telling Dr. Johnson that we do have confidence in him, that we appreciate the leadership which he has so eminently shown us during the year. Dr. Johnson has stood four-square to the world in extending organized medicine. He has equally demonstrated his conscientiousness in upholding the ethical medical profession of North Carolina.

In the name of the State of North Carolina and the Medical Society of North Carolina it gives me a great deal of pleasure to present to you, Dr. Johnson, the President's Jewel, with our love and affection. (Applause.)

President Johnson: Gentlemen, since this was on the program I can't say that I am surprised. (Laughter.) But I do want to say that I appreciate this emblem, this tangible visible emblem of the love and affection of the doctors of North Carolina, more than any piece of property I have. If it could be taxed at what I really value it, I couldn't pay my taxes. I would have to put a mortgage on my house and home to do it.

I do want to say over again, that this past year has been one of the happiest years of my life. I shall always cherish the memory of the pleasant contacts with the doctors of North Carolina, and, as I told a member of my family not long ago, my travels over the state during the past year have increased my respect for the medical profession of the state immeasurably.

I do feel that the health of the state is in safe hands. You are the best fellows in the world and I thank you. (Applause.)

Secretary-Treasurer Long: The next item on the program is the report of the Committee on Awards of the Moore County Medical Society Medal.

Dr. J. S. Milliken of Southern Pines is chairman. Is Dr. Milliken here? (Not present.)

In his absence I will read the report of the committee: "To the Medical Society of the State of North Carolina: The members of the Moore County Medical Society Committee have decided not to award the medal this year. This has been decided on because of the failure of some of the section committees to select the best papers of their

sections. We feel that a selection this year would not be fair to those physicians whose papers might have been selected and reported to this committee.

"Respectfully,
J. S. Milliken, Chairman,
I. H. Manning,
T. D. Kitchin."

President Johnson: Gentlemen, you have heard the report of this committee. There is nothing to do but accept it, and hope for better luck next year.

Next is the report of the Obituary Committee.

Dr. Frederick Taylor!

Dr. Frederick R. Taylor: Mr. President, Members and Guests of the Society: I have been guilty of an indiscretion this year, in that when a number of men have written me desiring to read obituaries before this Section, I wrote them in all good faith that I would be delighted to have them read the obituaries, but the notices that have been set in, would, I think, require four or five hours to read, so it will be quite impossible to read all the material that we have.

Therefore, I shall have to content myself with simply reading the names and addresses of the doctors who have died during the past year and ask that anyone who has additional obituary material which he would like to bring before the profession, hand it to me at the close of this meeting, or any time while we are in session. It will then be turned over to be published in the Transactions.

Member: I would like to move you that the Society stand out of respect to these members while the names are being read.

President Johnson: You have heard the motion. All in favor signify by saying, "Aye."

The motion was carried by a rising vote.

Dr. Taylor: One other thing before reading the names: It has been impossible to get a complete list. I have done everything I could to get as many names as possible, but I would appreciate it very much if anyone who knows of names that have been omitted from this list of doctors who have died during the past year will come to me and let me have those names afterwards.

The members arose and stood in silence while the list of doctors who have died during the year was read by Dr. Taylor, as follows:

*Adams, N. B. ..... Murphy
*Anderson, Lester Lawrence ..... Stoneville
Ashburn, Claude Woltz ..... Pilot Mountain
*Ashcraft, J. E. ..... Fayetteville

* Members in good standing.

*Bass, Harris Hartwell, Sr. ..... Henderson
Battle, Ivan Procter ..... Rocky Mount
Blackburn, Thomas C. ..... Hickory
*Boseman, Claude Alfred ..... Pinebluff
*Bowman, Harlan Page ..... Greensboro
Bradford, Bernard McAuley ..... Kannapolis
Braswell, Mark Russell ..... Rocky Mount
Brown, George A. ..... Mt. Ulla
Buchanan, Charles Lee ..... Union Mills
Burleson, David Patton ..... Spruce Pine
Burress, Donald Arnold ..... High Point
Campbell, James ..... Norwood
*Cotton, Clyde Ellsworth ..... Asheville
*Cox, Ernest Lee ..... Jacksonville
Cox, Thomas Alexander ..... Hertford
Davis, George ..... Beaufort
*Davis, Stephen Webb ..... Charlotte
*Dickie, Jamie William ..... Southern Pines
Duffy, Leinster ..... New Bern
Duncan, Charles Lucas ..... Beaufort
*Ellis, Robert C. ..... Shelby
*Farthing, L. E. ..... Wilmington
Flippen, Robert D. ..... Pilot Mountain
Frink, H. W. ..... Chapel Hill
*Galloway, Walter Curtis ..... Wilmington
*Gibbs, Norfleet Mann ..... New Bern
Gyles, Ronald Corbin ..... Siler City
*Hardin, Ronda Horton ..... Banners Elk
*Harrison, Henry Hill ..... Asheville
*Hicks, Isham Faison ..... Dunn
Hill, William Lee ..... Lexington
*Holt, William Preston, Jr. ..... Erwin
Honnet, Joseph H. ..... Wilmington
*Hood, John Sydney ..... Gastonia
Hunter, John Victor ..... Asheboro
*Hunter, Lester Walker ..... Charlotte
Jones, Clarence Dupree ..... Hillsboro
*Jordan, William S. ..... Fayetteville
*Kenfield, Harrie W. ..... Hatteras
*Kerr, John Daniel, Jr. ..... Clinton
Lanneau, Charles B. ..... Flat Rock
*Leak, Wharton Greene ..... East Bend
Lee, Sanders P. Jethrew ..... Dunn
Mackie, Nathan Walser ..... Yadkinville
Martin, Wilson C. ..... Mocksville
*Matheson, James Pleasant ..... Charlotte
*McBrayer, Louis Burgin ..... Southern Pines
*McGee, James William ..... Raleigh
*McLean, J. W. ..... Godwin

* Members in good standing.

Melvin, Wayman C. ..... Linden
*Murphy, William Bailey ..... Snow Hill
*Olive, Percy Wingate ..... Fayetteville
Parker, Samuel Flowers ..... Goldsboro
*Perkins, John Russell ..... Winston-Salem
Rowe, Herbert Eugene ..... Newton
*Sherrill, Coite Long ..... Statesville
*Shields, Henry B. ..... Carthage
Sossoman, John C. ..... Midland
Sumrell, Guy Harold ..... Ayden
Tate, Charles Sidney ..... Ramseur
*Weaver, Henry Bascom ..... Asheville
Whitaker, Frederick A. ..... Kinston
*Wilson, Albert R. ..... Greensboro
*Wood, John W. ..... Boiling Springs
*Woodward, Grover Barney ..... Wilson
Zimmerman, Charles St.V. ..... Asheville

OBITUARY OF WALTER C. GALLOWAY, M.D.

By Ernest S. Bulluck, M.D., Wilmington, N. C.

Dr. Walter C. Galloway was born in Southport, N. C., and died in Gaithersburg, Md., on February 18, 1938. He was eighty-seven years of age and had lived through the greatest period the world has ever known.

After graduating from Washington University in Baltimore he practiced in Greene County. Seventeen years later he specialized in diseases of the ear, eye, nose and throat, and moved to Wilmington. He was a pioneer in this branch and for many years was the only specialist in that city.

Dr. Galloway served the State Medical Society as vice president, essayist, leader in debate, and as a member of many committees. He was a staff member of The Bulluck Hospital, president of the staff of The James Walker Memorial Hospital for five years and vice president of the New Hanover County Medical Society. He was president of the Y.M.C.A., and a director for ten years. As a Knight of Pythias he was representative to the Grand Lodge for twelve years. He was commandant of the George David Camp of the S.C.V., for three years he was its surgeon-in-chief. As commander-in-chief of the army of Northern Virginia he served four years.

During his seventeen years of general practice in Greene County he served terms as coroner, superintendent of health, editor of the Snow Hill *Advocate* and as state senator.

Dr. Galloway married three times and was the father of six children. Tall of stature, athletic in appearance, polished, immaculate, confident,

* Members in good standing.

he had the peculiar talent of keeping a wife happy. He was as romantic as a school boy, unerring in the courtly arts. He radiated the tender overtures to which every woman's heart is tuned. Always the sweetheart, his youth seemed perpetual. When deep in senility he could pen a poem of such delicate ardour as to stir the latent fancy of the most indifferent. At the age of eighty-five he married a charming woman of such suitability that he escaped the ridicule and received the genuine approval of his friends.

In many ways Dr. Galloway was an unusual man. He learned the fundamentals so well that he never forgot them. He mastered Smith's grammar, Webster's blue back speller, Bullion's Latin grammar and Blackstone. Seventy-five years of consistent study of English were but an elaboration of details built upon this solid foundation. The rules of grammar he never forgot. His prescriptions were models of Latin and written with a facile pen that challenged the script of the steel engraver. At the age of fourteen he fell in love with the Muses and he rollicked with them over the Elysian fields for a lifetime. He was no spring poet; he mastered the technique of meter and could write in rare forms with which few of us are familiar. He sang of love, philosophy, hope and death as is the wont of true poets. He knew all the words and what they meant. In my twenty-five year acquaintance he wore to unbound leaves, two Webster's unabridged dictionaries. He delighted in the study of synonyms and antonyms and in the fine shading of expression that they effected. I have often thought how he must suffer when he heard us talk and when he read the things we wrote.

Dr. Galloway practiced medicine until he was eighty-five years old, and discontinued then because his marriage carried him to another state. He was not feeble and his mind was still alert. His professional opinion has always commanded respect. In medical ethics he had standards that we hardly understand today. In his old age he must have suffered many rebuffs from our crudities and the arrogance of youth must have taxed his tolerance but he was never critical, and certainly above retaliation.

He seemed to remember everything he had learned and the intricate anatomical descriptions with which the student struggles, were at his tongue's end. I believe he was the first man in North Carolina to keep records of his patients that are comparable with those of today. He was a frequent contributor to medical literature and a forceful speaker, by word of text and by delivery.

Fundamentally Dr. Galloway was a technician. The meticulous detail of accomplishment was his pleasure. By refinement over a long lifetime he reached a high degree of perfection. The pursuit of this ideal furnished to him the joy of living. He developed from flower to fruit,

from green to ripe, then mellow. He climbed the clouds of ecstasy and plodded the valleys of sadness. His life was full, rich, useful and now it is finished.

OBITUARY OF FRED A. WHITAKER, M.D.

By Ira M. Hardy, M.D., Kinston, N. C.

Dr. Fred A. Whitaker died in Kinston, November 2, 1937, at the age of 88 years. The venerable physician passed away in Memorial General Hospital at 4 o'clock in the morning. He was dean of medical men in his part of North Carolina, and for many years one of the most popular figures in Kinston. He served on the school board many years. He ushered many prominent residents of the city and Jones County into the world. His practice until his last years was very extensive. Ill health caused his retirement a comparatively short time before his death.

"Dr. Fred," as he was familiarly and affectionately known to hundreds of people here and throughout the section, was a physician of the old family doctor type. He was in his active years of practice, covering more than half a century, welcomed into the homes of his patients as medical adviser, counsellor in other matters of private concern and confident of the family secrets.

Dr. Whitaker was born in Wake County, November 17, 1849. His parents were T. J. and Ann Rollins Whitaker. He was educated in the Raleigh schools, at Rutherford College, and the University of Pennsylvania. He graduated in medicine from the University of Pennsylvania in 1872.

From 1872 to 1895 he practiced in Jones County, residing on a farm. He went to Kinston in 1895. His practice was about the most extensive in the section for years. His patients in Lenoir and Jones counties numbered thousands.

He married Miss Carolina Stanley. She died many years ago. Surviving the union are two sons, Dr. F. Stanley Whitaker, a physician at Atlantic, N. C., and R. E. Whitaker, New York business man. Two daughters, Miss Myrtle Whitaker and Mrs. Ann Whitaker Broadhurst, died some years ago. Another daughter, Carolina, died in infancy. He married Miss Mary E. Becton in 1892. She died some years ago, childless.

With the sons, numerous grandchildren, nephews, and nieces survive. Nephews include Dr. Paul Whitaker and R. Allie Whitaker, of Kinston, and Dr. R. B. Whitaker, Whiteville.

The funeral was conducted by Rev. Albea S. Parker, pastor of the Queen Street Church. Dr. Whitaker was a member of the board of stewards of the church. He helped to build the edifice. Grandsons and nephews were active pallbearers. Honorary pallbearers were the stew-

ards of Queen Street Church and the members of the Lenoir County Medical Society.

Dr. Whitaker was a brother of the late Dr. R. A. Whitaker, of Kinston, and the late T. C. Whitaker, who represented Jones County in the legislature.

IVAN PROCTER BATTLE, M.D.*

By Edmund S. Boice, M.D.

Dr. Ivan Procter Battle had been in failing health for several years. The last two years he had repeated attacks of angina. Sometime during that period he suffered a cerebral hemorrhage and for the last six months, at least, was in severe pain a great deal of the time and totally incapacitated. As Dr. Masters just said, he died day before yesterday, and I think it was a blessed relief from what had gotten to be intolerable suffering. Just before I left home I learned that he had developed a fever of 106 degrees with respiratory infection.

Dr. Battle, as Dr. Northington mentioned to me this morning, came from what was probably the most intellectual family in North Carolina, a long line of professional men, in medicine, in the law, in education. He was graduated from the University of North Carolina and received his medical education at Jefferson Medical School, and since his graduation has been engaged in general practice in and around his home county, first in Battleboro, later in Rocky Mount. He was one of the men most instrumental in founding Parkview Hospital in Rocky Mount, and retained great interest in that institution up to the day of his death. He never lost interest in medicine. He never quit learning. He wasn't one of those who think an M.D. degree is the end of professional education. For him it was the beginning. He was always a student and thinker, and he remarked to me once about a certain classmate of his, "He hasn't much curiosity in medicine." Dr. Battle wasn't that kind. He had great curiosity in medicine. He had bound volumes up to date of the *Journal of the American Medical Association.* Even after he was incapacitated and no longer actively practicing, he continued to buy the newest books.

Dr. Battle was a lifelong friend of Dr. James K. Hall, and Dr. Hall never missed an opportunity to visit his home, and they spent much time discussing the things you know to be of interest to Dr. Hall and of equal interest to Dr. Battle. I considered him one of the best friends I had, and I know he was one of the best and most loyal members of this Association. In his death we have sustained a great loss.

---

* Read before the Tri-State Medical Society of the Carolinas and Virginia, and published in *Southern Medicine and Surgery,* March 1938.

DOCTOR IVAN PROCTER BATTLE *

An Epitaph

By Beverly R. Tucker, M.D.

Ivan Battle was his name. There was a man! His courage was as unquestioned as it was unyielding. Ivan Battle was a man of noble heritage, a cultured and a courteous gentleman. Ivan Battle was a doctor, a great and a gracious ministering physician—and the sorrow of his passing is transformed into the joy of his having lived.

"The Lord giveth and the Lord taketh away," but in this taking He has left us a memory of Ivan Battle that is a blessing and that is an inspiration.

The blended virtues of Ivan Battle live engrafted upon the hearts and minds of those who were happy in their knowledge of him.

Women admired Ivan Battle because of the gentleness of his masculinity. Men respected Ivan Battle because of the genuineness of his supermanliness. Men, women, and children adored Ivan Battle because his likeness to God was above that of other men who are supposed to be made in the image of God.

DOCTOR CLAUDE A. BOSEMAN †

By James M. Northington, M.D.

With the issue of this journal for January 1935 Dr. E. M. Poate, of Southern Pines, began the editorship of a new Department of Clinical Psychiatry and Ferensic Medicine.[1] A few days before the opening of the month of February copy for his department in the issue for that month came in. On the last day of January Dr. Poate died.

In September 1936 Dr. C. A. Boseman succeeded Dr. Poate in the editorship of the Department of Clinical Psychiatry, and each month since there has come from him and been passed on to our readers instruction of the greatest helpfulness in our daily ministrations.

In the meeting of the Tri-State Medical Association held within three weeks of his death, I said I believed the last words Dr. Poate wrote, he wrote and sent to me along with his contribution for the issue of the journal which came out a fortnight after his death.

By a series of strange coincidences, the good doctor who came to nearby Pinebluff a good many months after Dr. Poate's death and took up Dr. Poate's pen, sent me *his* contribution for the present issue of the journal just two days before *his* death.

---

* Read before the Tri-State Medical Society of the Carolinas and Virginia, and published in *Southern Medicine and Surgery*, March 1938.

† Published in *Southern Medicine and Surgery*, August 1937.

[1] Dr. Poate had a degree in Law as well as in Medicine.

From such coincidences do the superstitious gather materials for their own mystification and marveling. Dr. Poate and Dr. Boseman would have been among the last to attribute any significance to these two happenings; but would be disposed to use them to point out how occurrences which could have no cause in common, may be so related as to impose on the naturally over-credulous.

Dr. Boseman was only forty-three years old. Born at Enfield, he was graduated, Bachelor of Arts, from the University of North Carolina, where he won the Phi Beta Kappa key.

After a few years of teaching in the Enfield High School, he returned to the University for two years of medicine, transferred to the University of Pennsylvania, where he received his degree of Doctor of Medicine. He was a member of Phi Chi medical fraternity. During the war, he served as a lieutenant of artillery. He interned at Chestnut Hill Hospital, Philadelphia, and later served at Ward's Island Psychiatric Hospital and at Gallinger Hospital, Washington, and still later, on the staff of the Spring Grove Hospital, at Catonsville, in Maryland. He and Dr. Malcolm Kemp, in January 1936 established near Pinehurst, the Pinebluff Sanitarium, an institution which has gained rapidly the esteem of the profession in the state, and beyond its borders.

He is survived by his mother, Mrs. Bessie Gunter Boseman, of Enfield; two sisters, Mrs. John Sherrod, of Enfield, and Mrs. Charles Loughlin, of Charleston; two brothers, Dr. Edgar Boseman, of New York City, and Andrew Gunter Boseman, of Enfield.

DOCTOR RONDA HORTON HARDIN *

By Charles Hartwell Cocke, M.D., F.A.C.P.
Governor for North Carolina of the American College of Physicians

Ronda Horton Hardin (Fellow), the son of Mr. and Mrs. H. J. Hardin, was born November 27, 1892, in Boone, N. C., and died at Banners Elk, N. C., October 9, 1937, from coronary thrombosis following a ruptured gastric ulcer six days previously.

After two years of premedical work at Trinity College (now Duke University), he graduated from the North Carolina Medical College in 1914. Post-graduate work was taken at Tulane University, Mayo Clinic, Cook County Hospital, Chicago, and the New York Post-graduate Hospital. On November 11, 1914, Dr. Hardin married Miss Eulalia Austin, the daughter of the late Dr. James A. Austin of Charlotte, N. C. Three children survive, Ronda H. Hardin, Jr., Jacqueline, and Margaret.

Dr. Hardin was head of the medical department of Grace Hospital, Banners Elk, N. C., for a number of years, where his untiring zeal

* Published in *Annals of Internal Medicine*, January 1938.

and efforts in ministering to the mountain people and others were outstanding features of this splendid institution, maintained by the Presbyterian Church. He was sometime president of the Avery County Medical Society, a member of the Tenth District Medical Society, of the Tri-State Medical Society, composed of Virginia and North Carolina and South Carolina, Chairman of the Committee on Post-graduate Study of the North Carolina Medical Society, a member of the American Medical Association, and became a Fellow of the American College of Physicians, December 1935.

Dr. Hardin was not a prolific writer, but a keen student of medicine. He produced one paper on the subject of Milk Sickness, a condition little seen outside certain restricted territories, the result of his own personal observations and a valuable contribution.

He was quite interested in all civic affairs in his community, a member of Phi Beta Pi Medical Fraternity, and a deacon in the Presbyterian Church. Of modest and dignified bearing, Dr. Hardin's early passing at the age of 45 is a very distinct loss to the medical profession and to the entire community which he served so faithfully all of his medical career.

DOCTOR JOHN SIDNEY HOOD *

By Jackson T. Ramsaur, M.D.

When we recovered from the numbing effect of the shock, the deepest and most sincere regret filled the hearts of the members of the medical profession and all other people of his community on learning of the sudden death of Sidney Hood on the 14th of September. The kind of regret that is coupled with an emptiness and a sense of loss that cannot be replaced. There was something in the life of Sidney Hood that went out to all those who were in contact with him—something that died with him, and will not return.

It is not enough to say that he was a brilliant physician. The thousands of his patients to whom he was a refuge in time of sickness and a friend in time of trouble will testify as to that. The influence of his work is far-reaching. The Gaston County Nutritional Camp for which he worked constantly, and through which hundreds of undernourished children were given, and will be given, a chance for full development, is a monument to his memory. In intimate daily association, sharing offices with him for a long time, I never heard him say no to any worthy cause.

To say nothing of his ready wit would be to do him an injustice. His anecdotes will be handed down to the children's children of his patients, of his friends, of most of those even with whom his contacts were but

* Published in *Southern Medicine and Surgery*, October 1937.

casual. How could anyone forget his vivid portrayal of his first visit as a physician? Of when that patient died, how he hid in the woods to watch the funeral procession? Or the incident when he played fireman with a fresh placenta, beating out the flames with its soggy mass. Half truth, and half harmless imagination, his stories would make an interesting book.

Always broadminded, he was willing to listen to the other fellow's side of any questions; and there are many whose woes were lightened by his deep wisdom, or which he shouldered himself.

All of Gastonia, all of those who knew him, his many friends, his patients, his loved ones—even his enemies—mourn his death, remembering him as a great physician, a great friend and a great man.

DOCTOR WHARTON G. LEAK *

By Wingate M. Johnson, M.D.

Wharton Leak was born at Francisco, Stokes County, North Carolina, April 30, 1874. After graduating from the East Bend High School, he attended the N. C. State Medical College, from which he graduated in 1900. In June 1901 he married Miss Cora Vogler. Of their three children, two are graduate nurses, one of whom is a technician at the Episcopal Eye, Ear, Nose and Throat Hospital in Washington; the other is a public health nurse in her native county. A granddaughter is a member of the senior class of the Emergency Hospital, Washington. The strong family trend toward medicine is further evidenced by the fact that an older brother, who died in 1910, was also a practicing physician, and a nephew is now a pre-medical student at the University of North Carolina.

Dr. Leak was a real family doctor. To his patients he was the combination of father-confessor, nurse, and doctor that a real family doctor comes to be. They came to him not only for medical counsel, but for advice on farming, finance, love affairs, legal tangles, and numerous other problems. He will be sadly missed by his whole community.

For some years he had suffered from diabetes. The final chapter began when he accidentally pricked his left arm with a hypodermic needle. Infection followed with a fatal septicemia. No doubt the end was hastened by the fact that he continued to practice for several days after his arm was swollen and painful.

---

* Published in *Southern Medicine and Surgery*, March 1938.

DOCTOR J. P. MATHESON *

By James M. Northington, M.D.

On the 5th of this month, while returning home from Myrtle Beach, Dr. Matheson was killed when his car got out of control of the chauffeur, left the road on a curve and crashed into a tree. For several years, not being in robust health, he had spent much of each summer at the South Carolina resort. Lately he had appeared and expressed himself as feeling much improved in health, and his multitude of friends and patients were entertaining high hopes that he would soon be able to resume the many activities of his former busy life. Then, when our hopes were high they were shattered by this appalling news.

James Pleasant Matheson was born at Taylorsville in 1878 and schooled at Davidson College and the University of Maryland Medical School. After a short period of practice at Belmont, he came to Charlotte, where Dr. Charles A. Meisenheimer shared office space with him. Dr. Matheson never ceased to feel grateful for the kindness shown him by Dr. Meisenheimer. He spoken often of them in private conversations, and unusually feelingly in the course of a tribute he paid Dr. Charles' son, Dr. Thomas Meisenheimer, in the 1935 In Memoriam service of the Tri-State Medical Association.

After a few years in general practice Dr. Matheson pursued a course of study in Vienna to fit himself for practice in the specialty of diseases of the eye, ear, nose and throat. Soon after his return he became associated with E. Reid Russell, and when Dr. Russell soon afterward moved to Asheville because of health considerations, Dr. Matheson conducted the practice alone until 1917 when a partnership was entered into with Dr. C. N. Peeler, and these two, in 1920, established the Charlotte Eye, Ear and Throat Hospital. Since then, as the work expanded, other specialists have been added to the staff, always with the end in view of providing health care in this line of the very highest order.

Dr. Matheson held membership in the County, State, Tri-state, Southern and American Medical Associations; in the Laryngological, Rhinological and Otological Society, and the American Medical Association of Vienna. He was a trustee of Davidson College, a Fellow of the American College of Surgeons, a member of the Academy of Ophthalmology and OtoLaryngology, a member of Beta Theta Pi, Phi Beta Kappa and Omicron Delta Kappa; and of the Forty-and-Eight, honorary organization of the American Legion. Some years ago Davidson College awarded the LL.D. degree to her distinguished alumnus.

He was the originator of the idea and the prime mover in the building of the eight-story Professional Building and the Mayfair Motel,

---

* Published in *Southern Medicine and Surgery*, August 1937.

and one among the first in the Hotel Charlotte and the Independence Building.

In the last few years he had developed a delightful country place just outside Charlotte and stocked its artificial lake with waterfowl from all parts of the world; and at the time of his death he was busy with a more extensive development near Myrtle Beach.

Dr. Matheson was a man of good business judgment and great executive ability; but his activities outside his profession were never allowed to take precedence over his life work. First of all, even to the last, he was a doctor and a humanitarian; indeed, the former implies the latter. His charities were many and well thought out, and there was in them no ostentation. He held it to be better to allow a person in very poor circumstances to pay a dollar or two for an operation, and then to encourage the patient or the parent to feel that everything had been paid that should have been paid under the circumstances, and that nothing more was due him. "In that way," he would say, "they keep their self-respect."

Dr. Matheson ranks among the great of his generation in making available to his people the best of health care in his specialty, and his example and leadership were a constant stimulation to those in other fields of medicine and surgery.

A busy brain has ceased its work. A warm, sympathetic, generous heart is cold and still. A good and great doctor-man is gone from among us.

He was a bulwark of strength to this journal and—
"He was my friend, faithful and just to me."

DOCTOR JAMES PLESANT MATHESON *

By R. F. Leinbach, M.D.

The life of Dr. James P. Matheson of Charlotte, N. C., a member of this Society for many years, was summarily terminated in an automobile accident near Hartsville, S. C., on August 5, 1937. Dr. Matheson had not quite completed his 59th year of age. Born in Taylorsville, N. C., November 20, 1878, his early life was spent in a small community where everyone was his friend. Completing his public school education, he entered Davidson College, graduating there in the class of 1899.

After one year as principal of a school in Texas, he entered the study of medicine, graduating at the North Carolina Medical College and later at the University of Maryland. He then took up the practice of medicine at Belmont, N. C., a few years later coming to Charlotte where he was associated with Dr. Chas. A. Meisenheimer. About 1908 he

* Read before the Tri-State Medical Society of the Carolinas and Virginia, and published in *Southern Medicine and Surgery*, March 1938.

entered his life work as an eye, ear, nose, and throat specialist, first associated with Dr. E. Reid Russell in Charlotte. A few years later Dr. Russell moved to Asheville, and Dr. Matheson continued his work single-handed until the outbreak of the World War. He was highly successful from the start, soon making a reputation for himself throughout North and South Carolina.

At the outbreak of the World War he turned his practice over to Dr. C. N. Peeler and entered the U. S. Army, serving with Hospital Unit O from 1917 to 1919 as Captain, but before his discharge from the service was promoted to Major.

Re-entering private practice in 1919 in association with Dr. C. N. Peeler, he quickly regained his following and in 1923 built in Charlotte the first strictly Eye, Ear, Nose and Throat Hospital in North Carolina, and one of the first in the South. Here, as the reputation of this institution spread, he surrounded himself with a corps of able associates.

Working strenuously throughout the succeeding years, about 1933 Dr. Matheson's health began to break as a result of vascular hypertension and it became necessary for him to curtail his medical work little by little, finally surrending all private work in 1936, thereafter spending the greater part of his time at Myrtle Beach, S. C., where he had leased a cottage. His sudden death on August 5 brought deep sorrow to a vast concourse of friends.

Among Dr. Matheson's outstanding traits of character first to be mentioned was an exceptional ability to make deep and lasting friendships. I think of none who exceeded him in this faculty. His loyalty toward those friends was unquestioned. He was profoundly unselfish and generous to a fault. Himself a man of the keenest judgment and perspective in his own line of work, he knew no jealousies. Every movement for the elevation and betterment of medical work in his neighborhood was sure to receive his moral support and usually his financial support. Many such movements he initiated himself. His judgment was of such a high degree that his advice was sought in time of trouble even on non-medical matters by many of his friends.

In addition to membership in the county and state medical societies, he was also a member of the Southern Medical Association, the Tri-state Medical Association, the American College of Surgeons, the Triological Society and the American Medical Association of Vienna. Among his outstanding honors was that of being given the degree of LL.D. by his Alma Mater, Davidson College, a number of years before his death. He was a member of the Second Presbyterian Church of Charlotte and though not actively engaged in church work he knew and practiced daily the technique of Christianity in his dealings with all men.

Remaining a bachelor throughout his entire life, his passing was mourned by men and women, rich and poor, and in all walks of life. This Society has sustained in his demise one of its greatest losses.

DOCTOR JAMIE W. DICKIE *

By Charles Hartwell Cocke, M.D., F.A.C.P.
Governor for North Carolina of the American College of Physicians

Dr. Jamie W. Dickie of Southern Pines, N. C., was born near Henderson, N. C., October 25, 1893, the son of George T. and Manolia Coppedge Dickie. He graduated from Wake Forest College in 1914, receiving his doctor's degree from Jefferson Medical College in 1917, and immediately joined the U. S. Navy Medical Corps, and was stationed at Fort Lyons, Colorado. He received his discharge in 1919, and for two years became associated with the late Dr. W. L. Dunn of Asheville, specializing in pulmonary diseases.

He then went to Southern Pines, N. C., where he established Pine Crest Manor Sanatorium, which has been in successful continuous operation since. This institution is devoted to the study and treatment of pulmonary diseases.

Dr. Dickie did postgraduate work on many occasions, having spent the entire past winter at the University of Pennsylvania and at Peter Bent Brigham Hospital in Boston. He had only returned to his work a few days when he was taken with pneumonia from which he died July 6, 1937.

His publications were not numerous, and were on subjects related to the chest. As an avocation, however, he wrote short stories and poems, and was widely interested in literature, particularly biography.

He was a member of his county and state medical societies, a Fellow of the American Medical Association, and became a Fellow of the American College of Physicians in 1936. He was a director of the North Carolina Tuberculosis Association and a member of the National Tuberculosis Association.

He was a member of the Episcopal Church. He leaves in addition to his wife, who was Miss Inez Benthall, a son, David Henry, and one daughter, Jane.

Dr. Dickie was a man of great personal charm, of good judgment and wide knowledge in his chosen sphere of medical activities, and his sudden passing at an all too early age will leave a gap in the medical profession of this section that will be hard to fill.

DR. C. L. SHERRILL†

By Charles Hartwell Cocke, M.D., F.A.C.P.
Governor for North Carolina of the American College of Physicians

Dr. Coite Long Sherrill (Fellow), of Statesville, North Carolina, the son of Walter and Anna Long Sherrill, was born September 4, 1887, in

* Published in *Annals of Internal Medicine*, September 1937.
† *Ibid.*, August 1937.

Texas. He received his academic education at Wake Forest College, N. C., and graduated in medicine at the North Carolina Medical College in Charlotte in 1914. He spent his internship at the Stetson Hospital, Philadelphia, and pursued post-graduate studies in several New York hospitals, the Mayo Clinic, and various other clinics of the country.

Entering the U. S. Army in November 1917 he was commissioned a captain, promoted to his majority in May 1918 and sailed for France in August of that year. He was discharged July 19, 1919, as a lieutenant colonel, later entering the Medical Reserve Corps as a full colonel, which commission he held at the time of his death. He was very active in Legion affairs, was local Post Commander for one term, and held various executive offices with the state department of the Legion. He was elected National Commander of the Wildcat Division in 1936.

He was chief of the medical department of the H. F. Long Hospital, Statesville, N. C., at the time of his death, June 24, 1937, of coronary occlusion. His medical societies embraced his local and state medical societies, the American Medical Association, and he was made a Fellow of the American College of Physicians in 1931. For several years he had served as a member of the Post-graduate Committee of the N. C. State Medical Society; and at the last meeting of this society he was also made chairman of this committee as well as chairman of the Section on Medicine.

In 1917 he married Miss Mary McLain, and leaves three living children in addition to his widow. He was a member of the Methodist Church, and was considered a leading spirit in the affairs of his community. His hobby was fishing. While not given to writing or publication, he was a faithful attendant of the medical societies to which he belonged, an earnest student of medicine, a hard worker, and a fine gentleman who will be missed by all who knew him.

DOCTOR STEPHEN WEBB DAVIS *

By James M. Northington, M.D.

The doctors and a multitude of the laity of Charlotte and over the state have a great sense of deprivation in the sudden death of Dr. Stephen Davis a month ago.

He was born here and with the exception of a few intervals, he spent all his life here.

It took him a good time to find himself.

His first ambition was to be a scientific farmer. To that end he completed a course in agriculture at the Virginia Polytechnic Institute.

* Published in *Southern Medicine and Surgery*, April 1938.

Then his ambition took a military turn and he served some years in the U. S. Army, gaining rapid promotion in recognition of his talent and energy.

He resigned his commission and established a business connection in his home city. Still he felt that he had not found the vocation in which he would be happiest, in which he would be most useful.

So, he looked about him, wrote here and there, and, after much deliberation, he entered on the study of Medicine at the University of Pennsylvania.

A highly creditable completion of this course made him eligible for one of the most-sought-for of the interneships open to the members of his class. For this position he was chosen and he filled it with great credit to himself and his Alma Mater.

Then he came back home to Charlotte and entered on a career of remarkable success. Enthusiasm he had in an unusual degree. He saw the need for special facilities for treatment of pneumonia, and he supplied that need. He saw the need for special physical equipment for use in the treatment of diseases of the vascular system, and he supplied that need.

Dr. Davis was one of those rare persons whose strong conviction and determined purpose could overcome obstacles seemingly unsurmountable.

His untimely taking off is a great loss not only to Charlotte, not only to North Carolina, but to Medicine everywhere.

DOCTOR LEWIS BURGIN McBRAYER *

By Addison G. Brenizer, M.D.

The first day of the present month marked the passing on of one of the last of the Old Guard of the Medical Society of the State of North Carolina.

I would not neglect this opportunity to pay a tribute to Dr. McBrayer, not that I am in any way capable of doing it, nor am I able to adequately take his measure, but because he so abundantly deserves it and because we delight in honoring those deserving of honor.

What I shall have to say is, largely, repetition of my part in the program of a testimonial dinner given to Dr. McBrayer while the State Medical Society was in session at Winston-Salem last year.

Dr. McBrayer served the Medical Society for the 27 years I knew him, first as examiner in surgery on the Board of Medical Examiners, then as Superintendent of the State Tuberculosis Sanatorium, and for years as Secretary of the State Medical Society.

My first impression of him was of a man with much information, energized by a strong and robust body. I thought that "It must take

* Published in *Southern Medicine and Surgery*, April 1938.

considerable fuel to run him, and that he were lavish with his fuel, keeping the draft open."

Some people have a desire to make changes, for variety's sake if nothing else, but if there were ever an ambitious lad, who thought of replacing Dr. McBrayer, he quietly folded his tents before lining up for combat, for he knew that he could never know and do the work anywhere near so thoroughly, and the chance of contrast bewildered him. And so it is now. We shall not be able to find one to actually replace Dr. McBrayer, but will find one who in a measure may substitute him.

I can't believe that Dr. McBrayer is gone. He has always looked so well! I had thought that Apollo, and Aesculapius and Panacea would preserve him always.

Outside of the major work and intent of life, I have always liked the spritely or humorous side. I think I should like to be able to say:

> If I should live to be
> The last leaf upon the tree in the Spring,
> Let them smile as I do now
> At the old forsaken bough to which I cling.

Yes, we might turn on life in a mocking spirit, much more severe than the lines of the genial Oliver Wendell Holmes, and at times we feel like doing it, when we are fed up, literally soaked to the ears. We could turn on life like the flippant chorus girl, throwing the mid-section of our body out of joint, and thumbing our nose, and saying about life, "It's all spinach; to hell with it!"

But we, as did Dr. McBrayer, must never despair of life and happiness, for, with Abraham and Jacob and Joseph and David and Christ, we are all treading the Eternal Road, on to God! And may the Great Physician, our generous Lord, lead him, as I think He will lead most physicians, up to the very Throne!

DR. L. B. McBRAYER

1868-1938

The directors of the North Carolina Tuberculosis Association are unable to find words to adequately express their sorrow for the death, a few days ago, of their leader, Dr. L. B. McBrayer. Always a friend of the Association, promoting its interest and that of the anti-tuberculosis cause generally, he was at the same time a personal friend of each individual member of our Board. In our hearts there is none to fill his place.

He was responsible more than any other person for the organization of the North Carolina Tuberculosis Association in 1915. He was managing director of the Association from its beginning until August, 1937,

when he resigned because of his failing health. He was superintendent of the North Carolina Sanatorium from 1914 to 1924. During these years, with his great ability, courage, patience, and winsomeness, he gave strength and hope to many hundreds of despairing souls and set their feet again upon the winning road back to health.

To him a sanatorium was not a mere hospital where patients pursued the cure. It was a well organized center of directed human living where patients were given the highest type of social as well as medical aid. In these objectives he was satisfied only with the best and all who worked with him came under the spell of his inspiration.

He was interested and influential in the affairs of the National Tuberculosis Association and in the Southern Tuberculosis Conference, of which organization he was president in 1925-26.

He was actively interested and participated in everything which concerned the North Carolina Medical Society and was its president in 1915 and its secretary-treasurer from 1921 to 1938.

He was a good physician, a fine health officer, an excellent superintendent of State Sanatorium, an enthusiastic leader of tuberculosis organizations—in all these capacities he worked with determination to conquer tuberculosis and his pioneering labors in this field won for him and for his state nation-wide recognition.

The directors of the North Carolina Tuberculosis Association will miss the warm humanity of the man, his personality, his idealism, the enthusiasm of his leadership, and hereby record their recognition of his great service and their sorrow and sympathy for the surviving members of his family, as well as for his host of friends.

RESOLVED, That a copy of this resolution be spread upon the minutes of this meeting and that the managing director send copies to the daughter and sons of Dr. McBrayer, to North Carolina Sanatorium, and to such other agencies as he may think best.

Dr. P. A. Yoder, *President,*
R. L. Carlton, *Managing Director.*

Greensboro, N. C.
April 5, 1938,
Annual Meeting
Board of Directors
N. C. Tuberculosis Assn.

LOUIS BURGIN McBRAYER, M.D., FACP.

By Benjamin Jones Lawrence, M.D., FACS, His Friend

Louis Burgin McBrayer was born in Buncombe County, North Carolina, December 27, 1868. In 1880 he moved to Asheville and lived there until 1914, when he became superintendent of the North Carolina Tuberculosis Sanatorium. He passed to his reward there at the home

of his daughter, Mrs. P. P. McCain, April 1938 and his remains rest in Old Bethesda Churchyard near Aberdeen.

He was educated at Newton Academy in Asheville, Judson College at Hendersonville, North Carolina, and received his Doctor of Medicine from the Louisville Medical College at Louisville, Kentucky, in 1889.

On July 18, 1890 he was married to Miss Lillian Cordelia Deaver. Three children, Rueben, L. B., Jr., and Sadie Lou (Mrs. P. P. McCain) were born of this union. All three children survive their father. Mrs. McBrayer died several years ago.

Dr. McBrayer received his license to practice medicine and surgery in North Carolina in 1891, and began work in Asheville. He soon acquired an extensive surgical and general practice. He was interested in the advancement of public health, and served as Health Officer in Asheville from 1909 to 1914. Public health and improved living conditions were close to his heart. He had always a deep concern about tuberculosis, and his interest in this disease continued throughout his entire professional life. He conceived the idea that the State of North Carolina should provide a place to which the poor and the underprivileged who had fallen victim to the great white plague might go and receive some measure of relief. Largely through his efforts, along with those of Drs. Brooks and Jordan, the Legislature did provide a small beginning —perhaps about $15,000—for the purchase of land, buildings, and equipment, and in 1914 Dr. McBrayer became the first Superintendent of the North Carolina Sanatorium for tuberculosis at Sanatorium (then Montrose), in Hoke County. He continued in this position until 1924, when he was succeeded by his distinguished son-in-law, Paul McCain, who is at the present time so ably carrying on the monumental work undertaken by his eminent predecessor.

When one comes to appraise the life and attainments of Louis Burgin McBrayer, and to find words which are adequate to express the marvelous accomplishments of the man, that one is faced with a colossal undertaking. He had few equals and no superiors. He must be classified as a great man when measured by whatever yardstick one may choose. He possessed all of the attributes which make for success and for greatness. He was born of a sturdy, strong, Scotch stock, both physically and mentally. His powerful body was active and full of energy. It has been said of him truthfully, that he could and did cover more ground physically than any other single member of his profession during his life. His fine, keen mind furnished him a generalship which knew only to win. He was possessed of an unusual ability for leadership. His friends became deeply attached to him, and those who differed with him were forced to admire him, because of the outstanding success and the grandeur of his achievements. He was a deep thinker and a real philosopher. He planned carefully for the future, and his ability to execute successfully that which he undertook challenged the admiration

of both friend and foe. Truly, he was a Napoleon without a Waterloo. He was a fine combination of greatness, of strength, of courage, and of gentleness. He was as courageous as a lion and yet as gentle as a woman. He was long suffffering and patient with those whose vision was less great than his own. He was tolerant—always ready to forgive those who did despitefully use him, but as brave as any warrior who ever pulled an archer's bow, and when aroused he could lash out with a mighty force. Under such conditions, when his righteous indignation was aroused, he asked no quarter, and indeed, he gave none; yet when the smoke of battle had cleared, and the danger of cannon was no more, he would be found at the head of the army marching on up the hill for organized medicine in North Carolina. He believed truly that in unity there is strength and held with Kipling:

> " 'Tis the law of the Jungle,
> As old and as true as the sky,
> And the wolf that would keep it must prosper,
> And the wolf that would break it must die.
>
> As the creeper that girdles the tree trunk,
> The law runneth forward and back,
> For the strength of the pack is the wolf,
> And the strength of the wolf is the pack."

He loved the doctors of North Carolina. He loved every bit of his blessed State—from that flat portion down by the sea—where he loved so much to go and to visit—all the way through the Piedmont section, with its roaring industry, up into the cloud capped mountains of Western North Carolina, which was the apple of his eye. He liked to dwell there, and to think of the marvelous beauty and grandeur of his native mountain home. Perhaps his love and admiration for his great State, including the sandhills (where he is buried) was second only to his love for the medical profession whose unchallenged leader he was. Early in his career he showed his keen interest in and love for his mangificent profession. Throughout the long years of his career, he demonstrated a singular capacity for leadership. He loved it with all his heart and with all his soul. He gave himself to it unreservedly, and with a consuming passion. No group of doctors was too small to invite his interest, and no assembly was so large but that he felt perfectly at home among its leaders. His life was sown among fertile soil, which makes for success, and its taproot went down deep into the clay, which furnished an ever ready supply of strength and nutrition; its branches went high into the sunlight of freedom of thought, and enjoyed the fresh air of wholesome companionship and leadership among the most daring soldiers of his age.

"To every man there openeth a highway and a low,
The high soul climbs the high way, and the low soul
gropes the low,
And on the misty flats between,
The other souls move to and fro',
"To every man there openeth a highway and a low,
And every man must choose which way his soul shall go."

Truly he chose the High Way! Dr. McBrayer's life was so full and so big that it's magnitude cannot be appraised properly in one chapter. In order to attempt to do it justice, one must think of him first, as a physician in private practice; second, as a pioneer in public health, with a special interest in tuberculosis; and finally, as a leader in organized medicine in that great field which did him honor and to which he was an everlasting ornament.

Now we come to mention his work as a private practitioner. Early he attained success because of his skill and knowledge of medicine and surgery. No person was too humble to receive his painstaking attention. No night was too dark for him to brave. His patients loved him and trusted him. His fellow practioners learned early to depend on him for consultation and advice. The success of this dashing young man soon spread throughout the hillsides of Western North Carolina. He became a member of the Staff of the Mission Hospital, and was surgeon to the Southern Railroad for many years. While yet engaging in private practice in Asheville, he was called to a larger and broader work as a public servant. In 1901 he was elected Coroner of Buncombe County and served in that capacity, along with his private practice, until 1907. His love for and his interest in public health, which was to play such an outstanding part in his life, was growing all the while. In 1909 he became Health Officer of the City of Asheville and served in that capacity until 1914. Here, he rendered outstanding service to his City by improving its sanitation, with special interest in its water and milk supplies. During these years Dr. McBrayer was thinking about tuberculosis and his interest in the subject was growing. He saw many victims of the white plague flock to Asheville and the mountains of Western North Carolina seeking relief. His great heart throbbed for that other group of individuals who could not go to a private sanatorium. He longed for an opportunity to help those who could not help themselves, who had become its victims. And finally, his great opportunity came. His hour struck—when in 1914 the sanatorium was established and he began to fashion it into the superb structure it was destined under his supervision to become. He was privileged to see his brain child grow from a small beginning to a magnificient hospital containing several hundred beds, and, finally, he saw established an additional institution high in the hills of his native Western North Carolina. It is a far cry from a $15,000 beginning to the $395,000 appropriated

by the last Legislature for the two institutions. Indeed, these two great plants touching, as they do, every County and every Community in our Commonwealth, are a permanent, living, throbbing monument to the life and efforts of Louis Burgin McBrayer, and from his seat across the silver sea, he must smile with a peculiar satisfaction as countless thousands go to those institutions for relief and call his name "Blessed." If Dr. McBrayer could speak to us now he would say to those still holding aloft the torch:

"So live, that when thy summons comes to join
The innumerable caravan which moves—
To that mysterious realm,
Where each shall take
His chamber in the silent halls of death,
Thou go not like the quarry slave, at night
Scourged to his dungeon but sustained and soothed
By an unfaltering trust, approach thy grave
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."

Whenever public health or the standards of the medical profession in North Carolina were under consideration, Dr. McBrayer was always in the thick of the fight, appearing before Legislative Committees in both House and Senate.

He was on the Commission appointed by the Legislature to establish the Caswell Training School, and a member of its first Board of Directors. He took a peculiar interest in that work as long as he lived.

Along with his other manifold duties and responsibilities, Dr. McBrayer handled the North Carolina Tuberculosis Seal Sale from 1915 through 1937. He was President of the Southern Tuberculosis Conference in 1925, and was greatly interested in and usually attended the meeting of the National Tuberculosis Association.

While Dr. McBrayer was superintendent of the North Carolina Sanatorium, the training school for both white and colored nurses was established, and the management of patients suffering with tuberculosis was wonderfully improved because of the painstaking efforts and striking ability of this Great Clinician and Medical Philosopher.

He was never actually an official member of the North Carolina State Board of Health, but he was always an unofficial member. He was vitally interested in the progress of public health in North Carolina, and its relationship to the medical profession—whose brain child it is—and its relationship to all the people of our commonwealth. It may be said without challenge that his thinking, his living and his influence—more than that of any other individual—helped to shape and to mould its policies. His advice and his counsel were sought always when major matters of policy were under consideration. It was Dr. McBrayer, along

with one or two others, who sat in the conference and directed the thinking, which lead to the actual redrafting of the new or reorganized Health Act under the Gardner administration. It was his wisdom and advice, along with that of Dr. John B. Wright, which caused the selection of the able, eloquent, and scholarly James M. Parrott as State Health Officer under the newly reorganized department. Dr. Parrott was called to his reward. Again it was Dr. McBrayer who lead the fight for and whose influence caused the selection of the present Health Officer, our distinguished Dr. Carl V. Reynolds, a life long friend and associate of the subject of this discourse.

In addition to the outstanding work done by him at the Sanatorium, while he was there he caused to be established public health nursing in North Carolina, secured Miss Rose Ehrenfelt as North Carolina's first public health nurse, and paid a part of her salary from the funds of the State Tuberculosis Association. Therefore, for whatever measure of success and achievement and distinction that has come to our North Carolina Health Department, a large share of credit must go to this superb character.

Next to the monumental work accomplished by this great public servant as superintendent of the North Carolina Sanatorium, his greatest achievement was exemplified in the marvelous capacity for leadership which made him the dominant factor in the medical life of his state for nearly a half century. Having joined the State Medical Society in 1900, he held every position of trust and responsibility within its gift. Early he made his presence felt, and soon was elected President of the Buncombe County Medical Society. He always took a great interest in its affairs, and often he traveled hundreds of miles just to attend a meeting. It was while he was a member of Buncombe's Medical Society in 1908, he was elected to membership on the State Board of Medical Examiners, the most sought and coveted position in the State Society. He served on the Board of Examiners a full term of six years—from 1908 to 1914.

In 1914, he was elected President of the State Medical Society. His presidential address, delivered in 1915 at the Greensboro meeting, is a masterpiece and is as a lighthouse set on a hill to guide our footsteps yet. He became Secretary and Treasurer of the North Carolina State Medical Society in 1917, and it was in this last capacity that he achieved the crowning glory of his career. He served continuously in that position until 1937, when on account of declining health he resigned, and at the Winston-Salem meeting in 1937 he declined to stand for reëlection. Dr. Thomas Williams Mason Long, of Roanoke Rapids, had served for a six weeks period as Acting Secretary. Dr. McBrayer's friends and the entire State Medical Society gave a testimonial dinner in his honor at that time, and as a token of their love, high esteem, and real affection, they elected him honorary Secretary and Treasurer for life. It will be con-

ceded unquestionably by all thinking men that Dr. McBrayer was by long odds the most powerful influence and the dominating factor in the medical profession of his state, and the most colorful figure who crossed the stage of action during the half century which he was permitted to serve. The history of the State Medical Society of North Carolina for more than thirty-five years is the history of the life and the efforts of this man. Nobody ever heard of or even thought of his missing a meeting. To think of Dr. McBrayer is to think of the North Carolina State Society. The thoughts are almost synonymous:

"The spirit of this man is still alive—
This man who fought his battles unafraid.
This was his goal—to serve his fellow man,
Sustained in all he did through Faith in God!

He did everything for the North Carolina State Medical Society.

"Your soul is of my soul, such a part
That you seem fiber and core of my heart."

He lived, breathed, and thought for it. The philosophy of that little verse represented his devotion to organized medicine in North Carolina. He gloried in its achievements and its relationship to all the people of our commonwealth. As Secretary and Treasurer of the State Medical Society, he was ex officio a member of all committees both standing and special. He attended every one of them. He not only went to the meetings, he directed the thinking and the debates whenever controversies arose. He helped compose or actually drafted the major portions of the resolutions. It was while he was Secretary that the Constitution and By-Laws were so amended as to provide for the executive committee to be the State Medical Society, *ad interim.* Anyone acquainted with the happenings of the North Carolina State Medical Society during the past thirty years will readily concede that Dr. McBrayer's keen intellect, his strong character, his power of debate, his sweet and wholesome attitude toward his fellows, gave him rightfully his dominant place of leadership. He arranged the meetings. In a large measure he directed the thinking of the whole body. He seemed everywhere at once, all over North Carolina—literally from Murphy to Manteo. He knew personally more doctors than any other man of his time. He knew their strength and recognized some of their weaknesses. He understood them, and because of his great strength of mind and character, flavored with his real love for mankind, his resourcefulness and his courage, he had the Gift of the Gods in the palm of his hand. He has gone from us. He crossed the stage of action, a colorful and matchless figure, to take his place among the immortals. I fear we shall not see his like

again. In our mind's fancy, we can imagine that reunion of the eminent, Thomas, Wood, Lewis, and Way—the eloquent Laughinhouse, the fiery Ohagan, the dashing Cyrus Thompson, the magnetic Dave Tayloes, Junior and Senior, the lovable Andersons, Dr. Albert and Dr. Thomas E., the scholarly Parrott, the sterling Isaac M. Taylor, and the gifted Haywoods. In the presence of such an array of greatness one is awe struck and transfixed. What a glorious Hallelujah must have gone up around the throne of Heaven when that group gathered to welcome Louis Burgin McBrayer to his Father's House not built with hands, but by God himself, eternal in the Heavens.

"Now the labourer's task is oe'r;
Now the battle day is past;
Now upon the farther shore
Lands the voyager at last.
Father, in thy gracious keeping
Leave we now, Thy servant sleeping."

DON ARNOLD BURRESS, M.D.

By Walkup R. McCain

Dr. Don Arnold Burress, 58, died December 2, 1937, after a lung affection at the Guilford County Sanatorium, after about 10 months, declining health. He had done general practice at High Point, N. C., since February 1923.

Dr. Burress was born December 17, 1880 in Anderson County, South Carolina. He graduated from Patricks Military Institute in 1898. He studied medicine at College Physicians and Surgeons, Atlanta, Georgia, University of Maryland and University of Louisville, Kentucky. Receiving his M.D. 1908. He practiced medicine in Iva, S. C., from 1908 to 1923 when he moved to High Point, N. C.

Surviving are his wife, Madge Jackson Burress and one daughter Margarette.

His death marks the passing of another of those faithful and beloved servants of humanity, whose sympathy, advice and encouragement often had more healing power than the medicine they prescribed.

DR. GEORGE A. BROWN

Dr. George A. Brown of Mt. Ulla, Rowan County, was born in Rowan County, N. C. on July 8, 1869 and died on February 29, 1938. He graduated from Davidson College in 1894 and from Medical College of Virginia in 1897. In 1906 he was married to Mary Katherine Knox of Rowan County. This union was blessed with four sons and one daughter all of whom have taken their rightful places in the world and are a credit to the state. Dr. Brown spent his whole life in the county of his birth and his life was an honor to his county and his state and to his profession. His whole life was one of devotion to his family his community, his church and he was always loyal to his friends. He was a man of more than average medical ability and though he spent his life in the country he was always anxious to acquire medical knowledge and was active in the councils of his profession. Such a life lived in the community of his birth. Always honest. Ethical with his professional brethren, unassuming, walking humbly, unafraid, always worthy of emulation, is a benediction to the world.

And great is his reward.

H. L. Monk,
J. H. Peeler,
E. B. Clement.

DR. COITE LONG SHERRILL

By T. V. Goode, M.D.

It is hard for one to write cold, statistical facts about one as closely associated with me as Coite Sherrill. We worked side by side for almost twenty years, and without being sentimental I think I can say that he was clear white all through.

Coite Long Sherrill was born in Texas. His parents had the pioneering spirit and courage which were exemplified in him. He came back to North Carolina at an early age and was educated in our public schools, Webb School in Tennessee, Wake Forest College, Jefferson Medical College, and graduated in medicine from the North Carolina Medical College in 1914. He interned at Stetson Hospital in Philadelphia following which he located in Statesville, where he did general practice until we entered the World War. He immediately volunteered for army service and was sent to Fort Oglethorpe for training, subsequently being transferred to Camp Jackson, and assigned to the 316th Field Artillery with which unit he served overseas and of which he was a member until he was discharged from the service in July, 1919. His rank was steadily raised and he was discharged as Lieutenant Colonel. He was later made a full Colonel in the Reserves and also elected National Commander of the Wildcat Division, both of which honors he held at the time of his death. He was also a very active Legionaire and was thoroughly devoted to the welfare and interests of the veterans. Many a time I have seen him examine and advise veterans about their compensation long after a hard days work when he should have been resting or taking some form of recreation, all without money and without price. He probably gave these men more free service than any other man in the state. They came to him from all surrounding counties. In recognition of this and other services to the Legion they honored him with every office they had except State Commander which his professional duties did not allow him to consider.

At the conclusion of his army service, he came back to Statesville and became a member of the staff of the H. F. Long Hospital where he was chief of the Medical Department. Professionally, he was beginning to be recognized as one of the leading internists in the state. He served a big clientele and served it well. He was a member of the Post-graduate Committee of the State Medical Society for several years, and was appointed Chairman of the Section on Medicine for this meeting.

I think his outstanding characteristics were his friendliness and his untiring energy, which latter may have contributed to his untimely death which occurred suddenly June 24, 1937. He would have been 50 years old last September, and was just beginning to attain well-earned prestige as a physician and although we cannot understand why, it is

not for us to question the wisdom of such things, but take courage and try to carry on where he left off.

Coite Sherrill was a good friend, a good doctor, and an excellent gentlemen.

IN MEMORIAM
LOGAN ELMORE FARTHING, M.D.

1879-1938

Dr. Farthing was born on June 6, 1879, in Boone, North Carolina. He died of Ulcerative Colitis on March 31, 1938 in Wilmington, North Carolina. He was the son of John Watts Farthing and Adeline Rivers Farthing. He is survived by his widow, Maude (Hackney) Farthing, to whom he was married in May 1908, and by one son, Dr. John Watts Farthing who is in Fellowship at the Mayo Clinic in Rochester, Minnesota.

Dr. Farthing was graduated from the University of North Carolina in May 1906 with the degree of Doctor of Medicine. Later on, he took post-graduate work at the Hospital Medical School in New York City.

In 1906-1907 he was Resident Physician of the James Walker Memorial Hospital in Wilmington, N. C., and in 1907-1908 he was Resident Physician of the State Hospital in Morganton, N. C. From 1908 until 1919 he practiced medicine in Pittsboro, Chatham County, N. C., where he built up a large and loyal clientele. From early in 1919 until he was stricken with his fatal illness he practiced in Wilmington, N. C.

Dr. Farthing was former Secretary and President of the Staff of the James Walker Memorial Hospital. He was a member of the staff of the Bulluck Hospital. He was Past President and Past Secretary of the New Hanover County Medical Society and a member of the Third District Medical Society of N. C. and by virtue of thirty years of continued service he was an honorary member of the North Carolina Medical Society. He was also a Fellow of the American Medical Association.

Dr. Farthing was a Thirty-second degree Mason and Past Master of the Pittsboro Lodge, A.F. and A.M. He was a Deacon of the First Presbyterian Church of this city.

Dr. Farthing brought with him to the Coastal plain of North Carolina much of the ruggedness of his native mountains in a strong physique and a well rounded mentality. He practiced medicine conscientiously, courageously, and with excellent judgment. In his last illness he displayed the same fortitude, courage and unselfishness that he had exemplifyed during the long years of the successful practice of medicine in this his adopted city leaving behind him the memory of a high example of a life well spent in the service of his fellow man.

He preferred Internal Medicine to all other branches of his profession and by reason of his early training he had a special aptitude for

Psychology and Psychiatry that stood him in good stead in solving many of the problems that confront every physician. He was capable of doing good surgery. I have, myself, seen him do major Surgery with expert technique and a steady hand.

Dr. Farthing was a good man and a Christian gentleman. He was unostentatious, but his value as a physician and his example as a man will long be remembered by his many patients and by his wide circle of friends and acquaintances.

The culmination of a well spent life is a serene and peaceful death—but that is not all for we pass into "Life Eternal" to join the "Choir Invisible" in the world beyond the Grave.

We, his colleagues feel that Dr. Farthing has "fought a good fight," he "has finished his course" and he "has kept the faith." Our benediction for him is: May he rest in Peace and may Light Perpetual shine upon him!

JOHN B. CRANMER.

SECRETARY-TREASURER LONG: Is Dr. E. F. Roberts in the room?

PRESIDENT JOHNSON: Gentlemen, before calling on Dr. Elbert McMillan, who is one of his residents and favorite pupils, to introduce our guest speaker, I want to say that I began to work on him two years ago to come here. As soon as I was made president-elect I got in contact with Doctor Strecker and he didn't promise me then but he did promise the first of this year that he would come and talk to our Society.

I am going to ask Dr. Elwood McMillan, who was his resident, to introduce the guest speaker.

DR. E. A. MCMILLAN (Winston-Salem): Members of the Society: Those of you who have been students of Doctor Strecker's at Jefferson Medical College and more recently at the University of Pennsylvania don't need to be told what a treat is in store for us today. Doctor Strecker's classes at the University of Pennsylvania are far and away the most popular classes at the University. During the time that I was there it became necessary to give tickets to the students to attend because frequently we would come there, just from another class, and find half of the seats taken by visitors. So it became an increasingly difficult thing to get an opportunity to hear him there, where he spoke once a week, and I think that all of us here today should be aware of the privilege that is in store for us.

Doctor Strecker is, as you know, Professor of Psychiatry at the University of Pennsylvania and at the Graduate School of the University of Pennsylvania at present. He is a member of societies and committees of various sorts. He is an author of note, and he is co-author of a recent monograph on alcohol that I feel is going to be a classic, and I recommend it to you.

It gives me the greatest of pleasure to present to you Dr. Edward A. Strecker of the University of Pennsylvania, whose subject will be, "Functional Illness and the Medical Psychology Needed by the Practioner in its Treatment." (Applause.)

"FUNCTIONAL ILLNESS AND THE MEDICAL PSYCHOLOGY NEEDED BY THE PRACTIONER IN ITS TREATMENT."

Edward A. Strecker, M.D., Philadelphia, Pa.

President Wingate Johnson, my old friend, Doctor McMillan, Members of the Medical Society of the State of North Carolina, and Ladies and Gentlemen: I do wish I knew how to express my satisfaction at the pleasure and privilege of being asked to come down to Pinehurst to address you at your Annual Meeting.

I musn't take too much personal satisfaction in it, because I should regard it as another one of those evidences of the fine professional and personal relationship that exists between your state of North Carolina and Philadelphia, almost a kind of North Carolina-Philadelphia axis.

We always welcome your young men. We find them just the right sort. We come very soon to know them, to trust them and to love them. I have only one suggestion, Mr. President: I wish you would whisper to a few of them, that we would like to have them stay with us. The memories and lure of the pineclad forests of North Carolina, and perhaps other things which are indigenous to this fine state remain in their minds and they soon leave our midst.

The subject I have selected is "Functional Illness and the Medical Psychology Needed by the Practioner in its Treatment."

I am not quite at the age when it is proper for me to reminisce, but really the proper starting point for this paper, "Functional Illness and the Medical Psychology Needed by the Practioner in its Treatment," takes us back, well, some of us five years, more of us ten, fifteen and even twenty and twenty-five years or more, to our medical school days, because that is where the difficulty about the understanding and treatment of functional illness originated.

Looking back over that period of time, in my own case more than twenty years, I think from the standpoint of fundamental illness, I can say that the medical schools didn't quite do right by Nelly. They didn't quite do right by us, in giving us some proper understanding of functional illness.

If you will let your minds travel back that period of years, one, two, and even more decades, I think you will agree with me that when we were in medical school we were taught only about half a man, just half a man.

Man, as far as we were concerned, was sharply de-halved, if I might use that expression, and we found out only about one side of him.

I mean by that that the entire teaching emphasis was on the concrete, on the physical side of man.

You remember there was anatomy, of course, the bedrock of medicine. That taught us about the organs of man, statistically speaking, the heart and what it looked like, the liver, the lungs and the kidneys, and other of his many complex anatomical structures. And that was that!

Then there was histology. You remember that histology taught us what these organs looked like in their finer subdivisions and structures and complexities when viewed through the lens of a microscope. That was good. Then there was physiology. That taught us how these organs and tissues acted, what they did. So that we got a view of dynamic man in contrast to static man.

Then there was morbid anatomy in which we looked at these interesting specimens of cirrhotic livers and damaged hearts, and fibrotic kidneys and the like. Then, finally, there was microscopic anatomy, the bane of every medical student, in which we viewed damaged and diseased tissues through the lenses of the microscope.

That was all. That was the sum total of our pre-clinical medical studies. We then went on and saw man in sickness, and studied the things that were called symptoms. So we got a perfectly splendid idea of organs and tissues, and we made our reverence to the great gods of organic pathology.

The other half of man, the psychological half of man, did not exist for us. We were given no understanding of the fact that complimentary and paralleling each of these material physical studies was an equally important and sometimes more important psychological man. I venture to say that when we got out to practice we were nonplussed. We found that there was something lacking in our equipment. We didn't know just what it was. But this is what it was, gentlemen: We had not studied the other half of our species.

For instance, most of us left medical school with an excellent idea of the heart, probably the supreme organic structure, what it looked like, its valves, how it functioned, and how it malfunctioned in various diseases and damages of the heart muscle and its valves. We didn't have any idea whatsoever of the thing that was called the emotions.

I have often said to my students that if the cardiac muscle, the heart, was the supreme structure of the body because it gives it its driving force, then the emotions are the heart of the mind, and a man who had no emotions would be just as dead as the man whose heart had stopped beating. Likewise, the man whose emotions are acting badly, in a sick way, is just as sick and sometimes even more sick than the man whose heart is diseased.

But we got none of that. We got none of the thing called medical psychology. We got no psychopathology. We didn't have any understanding of the fact at all that a man or a woman can be very sick, with very serious symptoms, headache, nausea, vomiting and backache,

and all sorts of symptoms, and yet be, as far as we can determine, organically sound, sound in the structure, but in the grip of sick emotions, in other words, anxiety.

Forgive me this prologue, but I think it is a necessary prologue to any consideration of functional illness. It explains why functional illness is still so badly dealt with; why it remains a kind of stepchild in the practice of medicine. The situation is a great deal better. Medical students are taught now about seventy-five per cent of a man instead of fifty per cent. And they do now receive some approximate idea of how sick a man may be without that sickness being revealed in damage to his organs at autopsy or under the microscope. He may be very sick indeed, and yet that illness cannot be demonstrated in a test tube or by any other laboratory test.

The important point in the practice of medicine is this: The presenting symptoms are the same whether the disease is functional or organic. When patients come to your office and to my office, we hear simply variations of the same set of symptoms: "Doctor," they say to you, "I have this terrible headache," or "I have this backache," or "I have nausea," or "I have vomiting," or "I have this distress in my stomach," or "My eyes aren't working right," and countless other things. That is the presenting group of symptoms, some variation of those symptoms and others that you elicit from every patient who comes into your office.

At first glance it is impossible to know whether the roots of those symptoms lie in diseases of the organs or structures, damage thereto, or whether they lie in sick emotions.

Such a simple thing as headache, in the one case, may be due to tumor of the brain or some intoxication within the body, and in another case may be due to an emotional conflict.

I saw a patient one time just barely rescued from the enthusiastic knife of the neurosurgeon with a diagnosis of brain tumor, because he did present a fairly adequate picture of brain tumor—headache, nausea, vomiting, even some slowing of his pulse—and yet that man had no more brain tumor than I did. There was a serious emotional conflict in his life which was being expressed in the guise of these pretty straight physical symptoms, some twelve or more years ago. The man is now entirely well, and, as you know, if he had had a brain tumor he wouldn't be with us now.

I am going to ask you to indulge me in one thing. This question of functional illness should, I suppose, be demonstrated by clinical material. I want you to assume that I have three patients before you. As a matter of fact there would be no greater advantage if I did have these three patients who actually exist in the flesh, though they are not here before you today, because after all they only have one merit: They are commonplace. Their clinical histories are commonplace. They

represent, I should say, at least sixty to seventy per cent of the practice of medicine. That is not the testimony of a somewhat enthusiastic psychiatrist but that is the opinion of such internists as Alfred Stengel of Philadelphia and others.

After many years of practice they have become quite convinced that almost seventy per cent of the practice of medicine deals with functional and not with organic illness. Men like Alvarez and others say that at least seventy per cent of the gastrointestinal diseases are functional and not organic. Of course that may not be always recognized and many functional patients go gleefully week after week for gall-bladder drainages, and both the patient and the doctor may honestly believe that they have gall-bladder disease.

We see the thing that we are prepared to see. But I think it is factually true that the largest segment of the practice of medicine is functional and not organic.

These three cases are three ordinary cases such as you might find in your offices when you go back to practice in a few days, or that I might find. I will cut corners in giving their histories.

The first patient was a man 49 years old and his wife was 35. They had two healthy normal children. There wasn't very much needed to find out his trouble. He told it at once under the stress of great anxiety. He said he was sexually impotent, and he was pathetic in his recital of what he had done to retain this lost function. The things he had done were rather pathetic, too: endless instrumentation of his genitourinary tract, prostatic massage, general massage, hydrotheraphy, electrotherapy and heliotherapy. Then the culmination of his sad story was a large sheaf of carefully kept copies of prescriptions for endocrine products, not only the ordinary ones that we know something about, like thyroid and perhaps pituitary, but the odd and strange ones, like extract of brain tissue, and other things. He had many such copies which repre-resented prescriptions that he had taken faithfully over long periods of time.

"But," said he, "I am not better. I am worse. I have done all these things that the doctors told me to do, and now I am worse. I have very severe burning pain in my perineum, and I have headache, and I can't sleep. I have loss of energy and my concentration is all shot to pieces."

That is one ordinary commonplace case.

The next patient in your consulting room is a woman forty-two years old who gives a classical picture of what might be very severe gastro-intestinal disturbances. She says, "Oh, doctor, I am a very sick woman. I have nausea, and I vomit almost every morning. I have loss of appe-tite and I have headache. I have backache and I am so dizzy that I am in deathly fear of keeling over at any time."

You admit that that is an ordinary clinical situation which you are going to see in your office many times. This woman had had two rest

cures. She had had a great many gastrointestinal x-ray studies. She had worn special corsets for gastroptosis which was fractional, and now she was having weekly gall-bladder drainages.

The next patient was a youngster 22 years old who was studying at Accounting and Commerce at the University of Pennsylvania. He had managed to get through the first year of his studies with the greatest difficulty. He was very frank about it. And now in the second month of the second year he said he was ready to give up the ship, because frankly, he said, "I am too sick to go on, and I would rather quit than flunk. There is no use trying."

His chief difficulty was that he couldn't concentrate, and he had no energy and no strength. He had never been a robust youngster. It was thought he had tuberculosis, but this was not so. He had always had a great deal of nose and throat involvement and frequent treatments were needed to shrink down the mucosa, treatments sometimes two, three or four times a week. He was underweight and he had had numerous dietary and rest treatments.

Those are the three cases, and you see they are ordinary cases: Headaches and nauseas and vomiting, backaches and dizziness and loss of weight, insomnia, and so forth. That is the story of the rank and file of patients that come to your offices and to mine.

Before going on with any further consideration of these three very simple commonplace ordinary situations, I think I have come to the time when I should make my own position clear, and I will ask you to remember, please, that far from being against it, I am in favor of any rational diagnostic measure or any rational method of treatment which is directed at underlying organic pathology that really exists.

If there is definite underlying organic pathology, then I say the medical man cannot go too far in either his methods of diagnosis or his treatments. So that particular segment of the practice of medicine is not a part of this consideration.

I do say that there are conditions under which the pursuance of futile diagnostic steps after the regular diagnostic steps have been exhausted, and when what I call whimsical therapy, based upon such will-o-the-wisp steps, becomes pernicious and not helpful.

What are those conditions under which a pure organic point of view, or conversely, a myopia concerning the possibility of functional illness is no longer good medical practice but is pernicious and dangerous and sacrifices the interests of your patient?

Those conditions are these: First, if the methods of diagnosis and treatment are mistakenly directed at minor and conjectural deviations. I am not talking now about damaged livers, fibrotic kidneys and real heart disease. I am talking about the situations in which when all the measures of diagnosis which would reveal those things have been exhausted and then the doctor with a blind spot concerning the possibility of

functional illness goes out of his way to find deviations of the nasal septum of a forty-second of an inch, conjectural disturbances in the function of the muscles that move the eyeball, droppings of the stomach, forgetting that it is part of our heritage to have the stomach a little lower than the textbooks say (since we have walked on two legs instead of on four that is a necessary penalty for our erect posture), and other minor and conjectural things, a single dubious apical abscess of a tooth, or not even that—that is the first condition.

The second condition is when our attitude excludes underlying emotional situations, when the doctor says, "I will be interested in anything that might have a physical implication, even though it is very dubious, but I will close my mind to any emotional situation."

He says, "I am not interested in the fact that this man is in the throes of anxiety, because, perhaps, of the disgraceful life of a son or daughter, or because of some great financial problem, or many of the other things, the slings and arrows of outrageous fortune."

The doctor says, "No, I don't believe in those. I only look at half the man."

The third condition is if the treatment is directed solely at surface signs or symptoms. That happens to the doctor who has a blind spot concerning functional illness and its emotional implications. After he has exhausted the ordinary and rational methods of treatment he is nonplused, and he is driven to the desperate stage of prescribing for symptoms. So that not knowing where this headache comes from, he gives coaltar products for it. Or not knowing why there is the gastrointestinal distress, finding no good organic reason for it, he says, "We had better wash out your stomach every week," and things of that sort.

Those are the three conditions under which it is not excusable to forget that man has an emotional side as well as an organic one.

Before presenting what might be called the inside of these cases, these very ordinary commonplace cases, I want to make clear to you that the kind of functional illness I am talking about and the kind of treatment that is necessary to help it does not particularly involve any special knowledge, not psychoanalysis, nor any of what might be called the refinements of psychiatry. Those things are important and have their place, but not quite as large a place as has been thought. To ask now, for things like psychoanalysis which requires special technique in the practice of medicine when ordinary common-sense psychology is still so much neglected, is like denying people who are hungry and starving ordinary good, wholesome bread and trying to feed them on the ectoplasm of cake.

I am talking about ordinary common-sense psychology in the practice of medicine.

Very briefly, these three cases, the man with the sexual impotence had been dominated far into his manhood by a very positive and aggres-

sive mother who made all his decisions for him, even when he was a mature man. He was fourteen years older than his wife, whose sex needs happened to be strong, and his neurosis began after some difficulty about sex relationship. The entire situation was so near the surface of the man's consciousness that it was very lightly repressed and was brought out at the first interview.

In the second case the case of the woman, there also happened to be a sex situation (though all functional illness is not due to sex difficulties, in fact, in the larger segment it is not), but in these three cases it happened to be an important factor. This woman with the gastrointestinal symptoms, nausea, vomiting, and other things, had come to a time in her life when, as sometimes happens, sex relations had become for her an unpleasant, difficult affair. She concealed her revulsion more or less successfully and tried by various subterfuges to decrease the frequency of sex relationship. For some time she had feared that her husband would tire of her and leave her. As a matter of fact, just before the onset of the neurosis or the functional illness, he had accused her rather pointedly of sex indifference.

In the third case, it was a problem which often presents itself in the practice of medicine, the problem of masturbation continued into adult life.

I said that functional illness is not preponderantly a matter of sex. In these three cases it happened to be so, but there are many other situations which will come to you every day in your practice, in which other factors are dominant and important.

I remember a situation in which the presenting symptoms simulated Graves' Disease or hyperthyroidism closely enough so that for a time they fooled an expert internist, with eyeballs that certainly gave the appearance of protrusion, with a tachycardia of 120 and often more, with considerable tremor, with loss of weight and a nervous irritability, and with a negative basal metabolism. It was not a question of Graves' Disease at all. It was a question of a functional illness on the basis of a very fine man, in a somewhat difficult situation in life, happily married, and with several children, working for a large brokerage firm, having discovered that his employers were guilty of practices which to say the least were dubious, if not positively dishonest, and they expected him to take part in such practices. It was plain to this intelligent man that unless he did so, he would be out of a job.

That is a situation which might produce anxiety and frequently does.

And so there are many others, particularly perhaps in this time which I know has come to you in your practices, the aftermath or the effect of what is politically called a recession (laughter) but which I am afraid is a rather stark, ugly, and naked depression.

That does things to people. It produces anxiety. It puts men, sometimes women in situations where they go around with a kind of an ax

suspended over their necks, not knowing when that ax will fall. They have their obligations in life, their ambitions, and their various emotional reactions which are done violence to by such situations.

One might go on endlessly talking about the things in life which produce anxiety. They are, as you know, literally countless and no one, none of us, nor anyone else, can ever hope to go through life without being subjected to a situation which produces anxiety. All these things, perhaps recognized long before our day and grouped together by the greatest of English poets under that immortal phrase, "the slings and arrows of outrageous fortune"—those are the things that produce anxiety in human beings, and which eventuate in functional symptoms.

You will say to yourself, "How is that so?"

I can see how anxiety is produced. In fact, I see it all the time. And as physicians who deal with great cross-sections of human beings, I know that you see it. And you say, "Perhaps that is one thing, but how does that get into functional symptoms? What is the connection between anxiety and the man or woman who comes to my office with headache and nausea and vomiting, for which I cannot find an adequate organic explanation?"

There is a close connection. It is really a sequence. To make the point, I ask you to have in mind the so-called "laboratory cat." It seems like a big step from people in the grip of anxiety to a frightened cat, but it is a very short step, after all, because perhaps we aren't so far away from cats as we like to think we are.

What happens to a cat that has been frightened? Sometimes in the laboratory, in order to study dynamic emotional things, we produce fear in a cat by holding it in front of a fierce bulldog. The things that happen are so obvious that many of them you can see with your naked eye without any test tubes. You see the tail literally seems to swell, the hair does stand on end, the pupils of that cat are dilated, and the cat is hissing and spitting. That is the picture of either a frightened or a fighting-mad cat. They both have about the same emotional picture. Then if you study that cat in a laboratory way, you find even much more important things. You find the heart beating at a tremendous rate. You find the blood pressure increased. You find great quantities of fuel glycogen and other fuels being sent to the muscles. The purpose of that is for the cat either to run or fight, as the circumstances demand, and the muscles are put in the best situation for that running or fighting.

You find even such fine changes as certain substances released into the bloodstream which hasten the clotting time of blood. So that the blood of a frightened or a fighting mad cat clots more rapidly than the blood of a tranquil cat.

Well, now, that is what fear and violent anger do to a cat. It is not so very different from what anxiety does to us and to your patient.

You see, you don't pull your functional symptoms out of a clear blue sky. They have a perfectly natural sequence, and they are expressed in every organ and every tissue of the body.

To go back to these three cases: Your next question might be, "Well, maybe in those three cases and maybe in some others, true, there weren't any organic explanations, but what harm was done and what was done, anyhow?"

Well, this is what was done, first, before the possibility of functional illness was considered: Genitourinary examinations—this is all beyond the ordinary scientific, honest-to-God, if I might use that term, examinations—and diagnostic steps, all of them, had been exhausted. Examinations without end, gastrointestinal, gall-bladder tests, studies of the nose, throat and sinuses, x-rays of the chest—and the treatment, urethral instrumentation, prostratic massage, general massage, hydrotherapy, electrotheraphy, heliotherapy, fanciful endocrine prescriptions, the wearing of special corsets, gall-bladder drainages, treatment of nose and throat, rests and diets, and many other things. Every one of those things is all right, gentlemen, if it is directed at an actual organic situation, and it is all wrong when it isn't.

Then what was done after the point of view was taken that these people's symptoms were functionally and not organically determined? Very simple things, things within the reach of every intelligent practitioner of medicine, whether he practice in a great medical center or whether he practice at the crossroads of some primitive place. An opportunity to talk over troubles that were not physical with the doctor. That is a big thing. That is an important treatment step. Explanation of simple, underlying mechanisms to the patient, a frank facing of their implications, and the correction of faulty mental attitudes and slight adjustments in the environment.

There again psychiatrists are not fanciful as sometimes you might think. They don't think. They *know* too well from long, sad experience that no one can be given a perfect setup in life. No one can be protected altogether from these slings and arrows of outrageous fortune. They cannot be surrounded by protective barriers. Life is a business of give and take, and they must meet life as it comes.

But, as you know, there are gross maladjustments in the environment which at least are capable of some correction. It may be very slight correction. I mean, it might be that by your common-sense medical psychology you help some woman who has functional illness by the mere fact that instead of her husband coming home drunk and beating her every night in the week, he does it only once a week. Well, that is a slight improvement in the environment, but it is worth something. (Laughter.)

So I am not talking about fanciful things, but about simple, ordinary common-sense, which is of the utmost importance. I mention the en-

vironment because when I was a medical student and no doubt when you gentlemen were medical students, we were told, "You better not fool with the environment, that is, people's personal business, what goes on in the house. Just treat their illness, and let the rest go, or else you will get into trouble."

A medical man who isn't willing to get into trouble because of a bad environmental situation had better not practice medicine, or had better confine his efforts to the cloistered precints of the laboratory.

To mistake organic for functional illness is considered a mortal sin in the practice of medicine. If I or any other neurologist or psychiatrist that I know ever made a mistake and say a man who actually has a brain tumor has neuresthenia, that mistake will be counted against me for the rest of my medical days, especially in medical centers, and people will go around pointing at me and say, "There is a patient I know about who had a tumor of the frontal lobe of the brain. He thought he had neuresthenia, and the patient died."

That is a sad thing. It happens sometimes, and it is a mistake. But it isn't quite as serious in my mind as the other one of mistaking functional illness for organic. The virtue of that mistake is that it isn't so obvious. The patient doesn't die, and you don't get pointed out. But the mistake as far as these great groups of patients are concerned is even more serious because it means if the illness is truly functional and we continue to treat it as organic, and subject the patient to months and years of gall-bladder drainages and nose and throat treatments and other things, that neurosis will be so deeply impressed and fixed in the patient that the greatest gods of medicine can never remove it. So that the last state of that patient is worse than the first, and in the final analysis it is a much more serious mistake than the first, if for no other reason than that it is made with much greater frequency.

Now, then, symptoms, ordinary symptoms, headache and backache, vomiting and nausea, can be due to a pathology that is not organic. We have to have something to call that pathology. Let us say it is a psychopatholigy, it is an emotional pathology. Very briefly, to cover what I mean by that, in your extensive practices, dealing with all kinds of illness, you know that it is your common everyday lot to see symptoms which are on the surface, the causes of which are deeply hidden in the body of the patient.

I am talking now about organic disease. A headache, as you know, doesn't mean there is something necessarily wrong with the scalp. It may mean a brain tumor, it may mean a kidney disease, it may mean liver intoxication; and even such a commonplace thing as a rash doesn't usually mean that the skin is defective. There is an illness deep somewhere in the patient which has come out as a rash. The cause of any symptom that you can think of is deeply hidden in the patient and is not where the symptom is.

I mention that to make a parallel with what I might call the beginning of a fundamental common-sense basis for psychology in medicine. Just as the cause of physical symptoms is deeply hidden within the body, so is the cause of these symptoms which happen to be functional also deeply hidden. Then you say, "Where hidden? After all, the cause of the headache may be hidden in the liver. That is true enough. But I can find it there, perhaps not until autopsy, but it is there and can be seen. What about the cause of these functional things?"

Well, there I can't show it to you. I can't show you emotional conflicts much further than what happens to the cat or what happens to human beings in the grip of anxiety. But it is there, this psychopathology, and therefore we have to say it is in a place which is not accessible to consciousness at once, which we might call a "not conscious mind."

I am not going to talk about the unconscious or the subconscious. I am simply going to ask you to believe what seems to me an easy thing to believe: That every one of us in sickness or in health has a psychology in us whose content we are not immediately aware of.

Think of all the things that have happened to you and to myself since the first hour we were born, the experiences of all kind, the experiences frought with great emotional significance. How many of those do you remember, and how many do I remember? And yet we haven't senile dementia. Those experiences and the things they produced are still in us and therefore we say it is right to assume that man has a mind which is not conscious.

There are many proofs of that. I don't want to use up too much time in giving proofs. The things that come out of patients under the influence of an anesthetic show there is a mind which is in them of whose content they are not outwardly aware. What about dreams? You dream and I dream. Where does the content of the dream come from? It must be non-conscious material because we are not conscious when we are dreaming, and perhaps the final proof of a not conscious mind is that it is necessarily so because it can be demonstrated in any of the physical sciences. I can take a piece of paper like that and tell you there is something that is in existence. It is something you can see and touch, and that being so, I can never make that piece of paper as though it had never been.

I can tear it into small pieces. I can burn it and treat it with acid and alkali. Always something will be left. You won't recognize it as the original piece of paper, but I could only drive myself into despair if I set out to make that as though it had never been, to efface it. That is a law of physical science, and it is also a law of psychological science: Something which has once existed in the life of an individual, an emotional experience, even a thought cannot be effaced as though it had never been. Always in some shape or form, no longer available to consciousness except under certain conditions, will it be a part of that

individual's psychology just as his physical structure is a part of his body.

So I should say that is the first thing that one must accept in order to use common-sense psychology in the practice of medicine: That there are many things which we see in our patients whose sources are not at once available to our scrutiny or to theirs.

This is the day of one important developmental step in medical research and science. Medical men now are working on the renaissance of an old important idea, that physically the human being shows certain tendencies which make him the particular kind of a person he is, physically. That is a very old idea which has been revived and which is now producing sound fruit. You remember the very old status apoplecticus of the French, by which they meant that a certain kind of man, physically, often short and muscular and thicknecked, was a potential victim of apoplexy, even though he was at the moment sound in his structure. We now speak of vesical types and gall-bladder types, and so forth and so on. That is one of the important steps in medical research.

It simply means that there are certain physical potentials in any of us which have not shown up in the form of disease and may never show up in the form of disease, but which make it more likely for that human being to be the victim of a certain kind of physical, organic illness, than of some other kind.

The same thing is true in the common-sense psychology of medicine. There are psychological potentials and tendencies within us, just as there are physical ones, certain drives, which determine a man's psychological behavior as do these other ones his physical behavior. And at the bottom of many functional surface signs and symptoms is the conflict between these sharply divergent psychological tendencies which are in every human being.

Finally, internists, practioners of medicine, all practioners of medicine, must often reflect in a philosophical vein upon the enormous physical changes that occur in the lifetime of an individual because of some chance physical happening. At least, we can't say it is more than chance now.

I will reduce that to an example. It is a common example in the life of these successful American industrialists, let us say, the economic royalists and others. (Laughter) They had to struggle for their business success. Finally they attain success. During the years of their struggle they are lean and hard and strong. Well, now their success exposes them to luxuries and ease, and it exposes them to too much good food perhaps and too much good drink, so they become what is called obese. In ordinary words, they get fat from easy living. Obesity, a common, everyday phenomenon, as you know, may change the whole future physical course of an individual, and frequently does.

He now becomes the potential victim of metabolic disease, of diabetes and many others, so if he had not been exposed to these chance things

which made him fat, his physical future would have charted an entirely different course. Something goes into the man—I am speaking now physically—which makes a change in his physical history, so that he becomes entirely different physically than he would have been otherwise.

The same thing is true of the psychological half of man. He comes in contact with emotional situations of various kinds and they seem often chance situations, of all kinds, and they may so alter his psychological future that it is entirely different than it would have been otherwise.

How does the fat get into the man or onto the man, I suppose would be proper? Well, I don't know. That would involve too many difficult chemical problems for me, but it gets there. How do the psychological things get into the man? I don't know, either, but they get into him obviously becauses they make a difference in him, so that he is a different kind of person.

Briefly, let us say that any basis for common-sense ordinary psychology of medicine, which is as applicable to some complicated emotional situation, but equally applicable to some poor woman whose husband is a drunken brute, or something else—common, ordinary common-sense and a willingness to understand and treat both halves of a man—that is all we are talking about. The basis for that would be the belief in the mind which contains material, which is not conscious, a belief in certain trends, psychological trends as well as physical trends, and finally, the validity of the thing that in psychology is called repression, that things are taken into us psychologically, repressed beneath the surface, but remain there and may come out at any time in the shape of physical signs and symptoms.

Finally, I want to make a point that I should have made at the very beginning. You say, "Well, if the practice of medicine consists of 60 or 70 per cent functional illness, it doesn't seem so to me." But, gentlemen, that is because you are thinking of it in terms of pure functional illness, hysteria, neurasthenia, psychathenia, and so forth, anxiety neurosis. Those things are much more apt to come to the specialist, but the things that you see very commonly are functional additions to organic disease, and there is your 70 per cent, fully. I mean that any organic illness may gather unto itself, and frequently does, functional additions, and that will be true whether that illness is as simple as an ordinary tonsillectomy or normal childbirth, or whether it is a serious gastrointestinal operation. Every one of your patients and every one of mine in the grip of some physical situation is the potential victim of functional additions.

You may have a patient with an ordinary Colles fracture, which you set splendidly, which you have treated correctly, which has now gone through the period which is needed for adjustment of function and exer-

cise, and the time comes—and the time is long past—when that man should have been well of his Colles fracture. He should have been using that arm a long time ago. It is perfectly all right. The x-ray shows it is all right. The muscles have regained their volume and strength but he doesn't use his arm. He says, "I can't move it. It hurts every time I move it," and so forth and so on. You must, at this point make sure this man's Colles fracture and the continuation of his disturbance of function is not perhaps due to the fact that he is unhappily married or that he has a son or daughter who has disgraced him, or that he is in the grip of some great financial worry.

In the most ordinary of ordinary medical things though it be the noblest, childbirth, you must know how many of your patients after the experience of a normal delivery and the ordinary time for convalescence, simply don't get well. The woman ought to be well. Everything is all right. A thorough examination shows that everything is all right. But the woman says, "I don't feel strong. I don't feel I can do my housework. I have this pain all the time," and so forth and so on.

When you have exhausted the ordinary measures of finding out if something is wrong physically, and nothing is wrong, then think of the possibility of functional illness. Whether that woman's continuation of her invalidism is on a functional and not an organic basis, and whether it is not due to some emotional conflict in her life rather than to the fact that the stomach is maybe an inch and a half lower than it ought to be.

So you must expect to find in every organic illness from the simplest to the most grave and serious not only the likelihood, but the opportunity for the addition of functional symptoms to organic illness. Each one of us has a weak spot in our psychological armor. That means we may go on very well day after day, and sometimes year after year, without any particular difficulty that we are aware of, but then comes the day when something happens. We may fall and break a bone, or we may have to have a surgical operation, or if we are women we may have a child delivered, and then the weak point in the armor is found, and at that place is added functional symptoms to organic ones.

I want to express my appreciation again of this rare opportunity and the fine pleasure and satisfaction I have in talking to you all, and meeting you all.

The audience arose and applauded.

President Johnson: Before going on with the next paper Secretary Long has some announcements to make.

Announcements.

Secretary-Treasurer Long: We have a telegram from the Southern Medical Association from Dr. C. P. Lorenz, Secretary-General, as follows: "Greetings. We hope you are having a most successful Annual Meeting. Regards and good wishes."

Here is a telegram just received from Dr. J. R. Paddison, the Chairman of the Section on Practice of Medicine, stating that he is unable to attend the meeting and appointing Dr. Fred Taylor of High Point to hold the Section on Practice of Medicine for him tomorrow.

The management of the hotel has promised to designate a room with a sign over the entrance this afternoon for the various sectional meetings. The Section on General Practice of Medicine and Surgery, the new section, Dr. W. J. Lackey's Section, will meet in this room this afternoon at 2 o'clock.

The Section on Gynecology and Obstetrics, Dr. Bayard Carter of Durham, Chairman, will meet in the Ladies' Card Room.

The Section on Pediatrics, Dr. Kenneth B. Geddie, Chairman, will meet in the Men's Card Room.

The Section on Public Health and Education, Dr. Roy Norton, Chairman, will meet in the West Lobby, beyond the main lobby of the hotel.

They are all the sections that will meet this afternoon.

President Johnson: After hearing Dr. Strecker's address, I think you don't wonder that after having heard him myself I began working on him two years ago to get him to come to this meeting.

It just occurs to me that this telegram from Dr. Paddison must mean that he is ill, or he would be here.

Dr. Hubert Royster is another one of our members who is ill I feel that it might be a good idea for the Society to send telegrams to each of these gentlemen, extending our sympathy and best wishes for a speedy recovery.

If there is no objection, I will ask the Secretary to do that.

The next paper on the program is "A State-wide Program for a Maternity and Infancy Service," by Dr George M. Cooper. (Applause.)

Dr. George M. Cooper then presented his prepared paper, entitled, "A State-wide Program for a Maternity and Infancy Service," making the following interpolation before the words, "It has been very hard to get these women to attend the Centers," on page 5:

Right here I want to pause to say that many of the physicians helping in this service have done just as hard and just as sympathetic work for these poor women, some of them working well into the night, as they would have done for the wealthiest patient in their clientele, and I want to pay tribute to that large group of physicians and make public acknowledgment in this way.

Another thing I want to speak about is that the success achieved so far, whatever it may be, has been due again in large part to the earnest and able service and sacrificing service of the public health nurses of the state and county who have gone out and done the work, and after all, borne the brunt. I also want to say that my associates in the office

have done everything humanly possible to help make the work successful, working overtime and out of time as the case might demand.

Finally, I want to say right here that in my tenure of office in public health work I have served with four of the six regularly elected state health officers during the last several years, and as Doctor Lewis was an influential member of our board until his death for many years after I went with the Board, I feel that I served under him, and as Doctor Netwood of Wilmington, the son of our first state health officer, was a close personal friend, I feel that I have had it all. But I want to say that every state health officer I have served under has been a man of ability. They have had their good points along with some weak ones, but in this work, and in all of our work in the overwhelming duties that have been imposed upon us no man of the group has afforded me greater satisfaction to work with than Doctor Reynolds. (Applause.)

His broadminded talents, sincerity of purpose, and his attitude towards his subordinates have made it a genuine pleasure.

I want to say also that nearly all of the physicians who have worked in these counties as assistants in this work with these poor people are enthusiastic today as to the value of such an enterprise, that is, everyone that I have consulted.

Dr. Cooper then concluded reading his prepared paper.

A STATEWIDE PROGRAM FOR A MATERNITY AND INFANCY SERVICE

By G. M. Cooper, M.D., Raleigh, N. C.

I am now going along in my twenty-fourth year as a member of the executive staff of the North Carolina State Board of Health. It has been from the beginning the policy of the department for which I am responsible in dealing with current and fundamental problems to lay before the profession most interested in the solution of such problems, proposed plans and procedures in advance of their inauguration.

Twenty years ago, I submitted here in this building a plan for dealing with the large and increasing number of school children whose health and school standing were impaired on account of common physical defects, chief of which were then and probably are now the various conditions resulting from diseased mouths and throats. The plan submitted and approved by almost unanimous action resulted in more than 100,000 operations during the next fifteen years.

A few weeks later I submitted a plan of action, after several years study and consultation with the leading dentists of this state, to the North Carolina Dental Society at Wrightsville Beach. They approved the plan and gave it their unstinted backing. From that time, June 18, 1918, for the more than eleven years following, during which time I was able to direct the execution of the work, at the time that project

was turned over to the present Director of Oral Hygiene, eleven years later, dentists representing our department had worked in every county in the state and more than a quarter of a million school children had passed directly through their hands. The educational work in both these fields was advanced in the only way that it can be done, and that is teaching by example.

It is my privilege to discuss with you today some of the essential features of a State-wide Maternal and Child Health Service. I hope I may be pardoned for calling this the third plan and probably the last which I shall ever have the privilege of submitting to the North Carolina Medical Society. To repeat, first, state-wide efforts for corrective medical and surgical work for school children; second, a state-wide system of public health dentistry in the schools; and third, now a proposed state-wide system of Maternal and Child Health Service.

This is not to be a statistical paper, but it is necessary to be reminded of the exact situation by the citation of a few facts from the record. To begin with, our state enjoys, or is cursed, depending upon the point of view, one of the highest birth rates of any state in the Union. Always where the birth rate is high the death rate also is high among mothers and infants, or at least higher than in states and countries where a low rate exists. For the year 1936, the last year for which we have correctly tabulated figures, it is interesting to make some comparisons between our own record in North Carolina and other states. While as just said, our rates of mothers and infants deaths are high, the situation could be worse and has been a great deal worse in the past.

For example, in 1936, the maternal death rate in North Carolina was 6.6 per thousand live births. In the same year, there were 13 states and the District of Columbia which recorded a higher maternal death rate, among them Tennessee, Texas, South Carolina, Mississippi, Louisiana, Georgia, Florida, Alabama, Arkansas, and Delaware. The others were southwestern states.

In the same year we had an inordinately high infant death rate of sixty-nine deaths per thousand live births. There were only eight other states which recorded a higher infant death rate than we had that year. We tied with Louisiana, having the same rate as that state. Some of the states having a higher rate were Virginia, Texas, and South Carolina. New Mexico, Arizona, and Colorado had the highest rates of any. A brief analysis of these figures is highly important. Bear in mind, we are considering the figures for the calendar year 1936 as certified by the United States Census Bureau.

In North Carolina that year there were 535 maternal deaths, 310 of them were white and 224 were colored, with one Indian death. Of these 535 reported maternal deaths, toxemias including eclampsia caused 187 of the deaths, add to that sixty-four deaths caused by abortion including those with septic conditions, and we find a total of 251 deaths from these

two causes alone, which is nearly half of the total deaths of mothers and most of which could have been prevented.

That same year there were 5,237 deaths of babies under one year of age. Of these 3,123 were white and 2,069 were colored with 45 Indian baby deaths. Of the total 5,237 deaths, 1,241 occurred under one day of age. That is about 24 per cent. Two hundred and ninety-three died before the end of the second day, although they lived a little longer than one day. An additional 607 died before the end of the sixth day. From the seventh day to the end of the twenty-ninth, 593 died. A total of 2,734 deaths under one month of age, about 52 per cent of the total baby deaths. Of the deaths under one day and before the end of the second day, 1,002 were due to premature birth. Finally, of the children dying under one year, 676 were due to diarrhea and enteritis, most of which occurred after the third month. Certainly half of these deaths, both mothers and infants, could have been prevented.

In that year there was a total of 76,277 births reported. Fifty-two thousand three hundred sixty-five of them were white and 22,318 were colored. Five thousand eight hundred of the 52,000 white woman were delivered by midwives, about 12 per cent of the total. Of the colored women, 15,600 out of the 22,000 were delivered by midwives, or about 67 per cent of the total. Thus, we see a total of more than 21,000 women had no medical service whatever during pregnancy or at the time of confinement. Add to this group at least 15,000 to 20,000 more women who only have the services of a physician at confinement and have very little or no prenatal medical service and you have the picture of the situation as it existed in this state in 1936.

After years of experience including practicing medicine, as a county health officer and with the State Board of Health we have come to the conclusion that the only practical manner of dealing with such a situation is to undertake to provide prenatal medical service in groups where these dependent women may have the benefit of medical advice when they need it most. The only practical plan that we have been able to think out or to devise is the plan of assembling these women in small groups at what we call Centers at least once a month when a physician may examine them carefully and render such medical advice as they may need. Starting in February 1936 and gradually put into effect during that year and the early part of 1937, we undertook to establish such Centers in some counties where the conditions seemed to demand it most.

In addition to the medical examination for the mothers during the prenatal stage and the undertaking to arrange with welfare officers for medical services at confinement in complicated cases, or hospitalization, and for *postpartum* examination and advice, we have urged the return of the babies of such people and others of the extremely poor class to these Centers for examination and record keeping, with particular em-

phasis placed on instruction as to feeding, immunization, and the necessity for physician's attention when illness comes.

By the end of 1936, we had established about 130 such Centers which we term Maternity and Infancy Centers, as distinguished from the word clinic in that no treatment is provided, as the Centers are purely preventive enterprises. Immunization, of course, is available. The Centers were established one or more in about forty-three counties. One hundred sixty-five local practicing physicians agreed to assist at least once a month, or perhaps alternating with the fellow practitioners in rendering this service. They are now being conducted in counties having whole time health departments only. The health officers are responsible for the arrangement with the local physicians, the selection of places for the monthly Center to be held and the other details of the field work. We have paid these physicians a varied amount, from $1.50 to $10.00 for a day's work. Compensation is wholly in the nature of an honorarium. A majority of the physicians coöperating with us have been sympathetic and interested and have done their best. A few of them have been careless, but most of them have been in deadly earnest and have given concentrated service to these poor people. In one or two cases, we have been informed that the physician was flippant and referred to the work as pie from Raleigh and Washington. No comment could be farther from the truth. But most of them in all the counties who have aided us in this work for eighteen months or more are enthusiastic today as to the value of such an enterprise.

It has been very hard to get these women to attend the Centers. Transportation has been a problem. Another trouble is the diffidence that such people frequently look upon any enterprise aimed at their safety. From the time the first two or three Centers were launched in February, 1936, through March of this year, a total of 11,562 women had received medical examinations. Each one of them had as a first order of procedure supplied a specimen of blood for a Wassermann examination. A total of nearly 13 per cent of these patients have been found to be syphilitic, about 5 per cent of them among white women and about 14 per cent colored. Such findings produce a sobering effect on any thinking person. When a woman in the later stage of pregnancy is found to have a four plus Wassermann, it is realized that a syphilitic baby will probably be born. It increases the stillbirths, premature births, and increases the hazards of maternity from every standpoint.

During this period, about 15,000 babies have been brought to the Centers and been examined and mothers have been advised by the physician in charge and the nurse, helpful literature has been placed in their hands and most of them have gone away encouraged to at least make an effort to care for their babies properly and to return them for regular monthly check-up.

This idea and this work is not new. It has been carried along in many places for some years, the most notable activity being in Charlotte, Fayetteville, and Robeson County. Our plan is to ultimately expand this system to reach every county in the state and the most needy communities of all such counties. It will require more and better trained public health nurses, it will require more physicians who are interested in providing medical assistance, it will require health officers who are genuinely interested in a Maternal and Child Health program, and above all, it will require a great deal more money than we have at present to spend on the enterprise. If such a system as we have already going in some of these counties could be extended before the end of this year to reach all the counties, and if the work could be taken seriously by everybody concerned, in five years the infant and maternal death rate in North Carolina would not be a cause for shame in any medical or public health group in the country. The ideal to which we are striving for such a service is to provide the services of a competent practicing physician for every family in the state, the service preferably to be arranged by the family and the physician, but for those who are financially unable to make such an arrangement, the group plan as we see it is the only practical one which could be expected to be fair to the physicians and productive of results for the patient and the public.

Summary

As long as more than twenty thousand women annually are dependent on midwives or fishwives alone for advice and assistance during pregnancy and confinement;

As long as the maternal and neonatal casualties in such a system remain so high;

As long as the prevalence of venereal diseases in this group remain at the present high level;

Organized medicine cannot ignore its responsibility.

It makes no difference what plan or whose plan is adopted, how the physicians are paid or who pays them, so long as the medical service is provided by the active practicing physicians in the community and the patient is allowed the exclusive right to choose his physician without advise or compulsion from any source.

The only way the physicians of this generation may assure this right to their successors, is by recognizing the need now for the extension of medical services to this large underprivileged group and providing the friendly leadership and coöperation necessary to solve the problem.

Dr. Cooper: I have saved the best statement for the last, and that is, that we are greatly indebted to the physicians and the officers of the State Medical Society, and I wish to include our late Secretary, Doctor

McBrayer, in that category, and to the hardworking, honest and efficient capable county and city health officers.

I thank you, doctor. (Applause.)

Secretary-Treasurer Long: The next paper on the program is by Dr. Robert Ross of Durham, "Ovarian Cysts and Tumors," from the Section on Gynecology and Obstetrics.

Dr. Robert A. Ross: This paper will take not more than ten minutes, I hope.

Dr. Ross then presented his prepared paper. (Applause.)

THE INCIDENCE OF PROLIFERATIVE OVARIAN CYSTS

Robert A. Ross, M.D.
Richard L. Pearse, M.D.
Durham, N. C.

In studying the Transactions of the Medical Society of the State of North Carolina for the past quarter century we were unable to find any presentation of the subject of ovarian tumors. The absence of this subject from our state medical literature is certainly no index to the occurrence of the condition. If one reads the daily list of operations in the hospitals throughout the state one would encounter the pre-operative diagnosis of ovarian cyst with frequent regularity. As a matter of fact one could almost tell with which hand the digital examination had been done. Then too in the female clinics one encounters a large number of females upon whom an operation has been done and in the history of such patients a sentence that has do with having had one ovary removed or a tumor removed from one ovary or cysts punctured is often elicited. And where the incision is right paramedian it is usually the right ovary that is missing. If one reviews the material submitted to the pathologist for diagnosis again one is impressed by the large number of ovaries that are removed.

The following is a record of the proliferative ovary tumors removed at Duke Hospital during the past 7½ years.

Summary of Cases

Simple serous cystomata	64
Dermoid cysts	32
Pseudomucinous cystadenomata	20
Serous cystadenomata	20
Malignant cysts	12
Endometriomas	8
Granulosal cell tumors	2

Krukenberg tumor	1
Cysts of undetermined origin	10
Total proliferative cysts	169

Non-proliferative cysts treated operatively over the same period.

Parovarian cysts	9

(These were either causing symptoms because of size, or removed incidentally.)

Follicular cysts	54
Corpus luteum cysts	40

(These were either causing symptoms because of size, circulatory changes or infection or were removed incidentally.)

Summary of Deaths of Those Patients Receiving Operation for Proliferative Cysts

Condition for which operation was performed	Cause of death
1. Simple serous cystoma.	Cardiac failure, pneumonia. Autopsy.
2. Dermoid.	Pneumonia. No autopsy.
3. Dermoid.	Under anesthetic on table. Arterio-clerosis. Autopsy.
4. Serous papillary cystadenoma.	Pneumonia. Autopsy.
5. Papillary cystadenocarcinoma.	Heart block. Autopsy.
6. Granulosal cell tumor.	Coronary thrombosis. Autopsy.

Total of deaths 6
Autopsies 5
Operative mortality, 3.5 per cent

Simple Serous Cystomata, 64 Cases

(All cysts lined with a single layer of flat epithelium showing no tendency to gland formation and with no granulosal cells present were included in this classification.)

Associated Conditions

Bilateral cysts	9	Abdominal ovarian sinus	1
Torsion of pedicle	2	Fibromyoma	22
Hemorrhage into cyst	4	Chronic salpingitis	15
Ruptured vein on exterior	1	Acute salpingitis	1
Intraligamentous	1	Adenocarcinoma of fundus	1
Peritoneal involvement	1	Fibroma of other ovary	1

Pregnancy 3

(Secondary to operation elsewhere)
Size, largest, 23.0 cm.; smallest, 1.5 cm.

Age		*Age*	
15-19	3	40-49	14
20-29	11	50-59	4
30-39	30	60-69	2

Parity: Nulliparæ, 12; Multiparæ, 52

Operative Procedures

Total abdominal hysterectomy with unilateral salpingo-oophorectomy	2
Total abdominal hysterectomy with bilateral salpingo-oophorectomy	4
Supravaginal hysterectomy with unilateral salpingo-oophorectomy	12
Supravaginal hysterectomy with bilateral salpingo-oophorectomy	34
Unilateral salpingo-oophorectomy	7
Unilateral salpingo-oophorectomy with excision of ovarian sinus	1
Bilateral salpingo-oophorectomy with suspension	1
Unilateral salpingo-oophorectomy with resection of remaining tube	1
Unilateral salpingo-oophorectomy with resection of remaining tube and suspension	1
Unilateral salpingo-oophorectomy resection of remaining tube and hysterotomy	1
Repair of accidental enterotomy	1
Secondary closure	1
Plastics to vagina	2
Appendectomy	36

X-ray. Post-operatively to one case with adenocarcinoma of the fundus and one with extensive peritoneal implants.

Dermoid Cysts, 32 Cases

Associated Conditions

Bilateral cysts	7	Fibromyoma	7
Torsion of pedicle	3	Chronic salpingitis	5
Infarction	1	Acute salpingitis	2
Squamous carcinoma arising from dermoid	1	Parovarian cyst	1
		Serous cystoma in opposite ovary	1
Papillary cystadenoma pseudo-mucinous with dermoid	1	Adenomyoma of uterus	1
		Pregnancy	1

Sigmoido-vesical fistula 1

Size, largest, 28.0 cm.; smallest, 5.0 cm.

Age		*Age*	
15-19	1	30-39	9
20-29	10	40-49	10
50-59	2		

Parity: Nulliparæ, 12; Multiparæ, 20

Operations

Vaginal hysterectomy with bilateral salpingo-oophorectomy 1
Total abdominal hysterectomy with bilateral salpingo-oophorectomy .. 2
Supravaginal hysterectomy with unilateral salpingo-oophorectomy .. 2
Supravaginal hysterectomy with bilateral salpingo-oophorectomy 13
Unilateral salpingo-oophorectomy 9
Unilateral salpingo-oophorectomy with closure of sigmoido vesical fistulæ 1
Bilateral salpingo-oophorectomy with suspension 1
Unilateral salpingo-oophorectomy with resection of remaining tube .. 1
Plastic to vagina 1
Appendectomies 22

X-ray. Post-operatively to three cases, viz.:
Associated squamous carcinoma in cyst.
Associated pseudomucinous cystadenoma with peritoneal implants.
Spill of contents during operation.

Pseudomucinous Cystadenomata, 20 Cases

Associated Conditions

Bilateral ..... 1 Necrosis 1
Papillary outgrowths 8

Size, largest, filled entire abdomen; smallest, 5 by 4 cm.

Age		*Age*	
13 years	1	40-49	3
15-19	2	50-59	2
20-29	8	60-69	1
30-39	1	70	2

Parity: Nulliparæ, 7; Multiparæ, 13

Operations

Total hysterectomy with bilatetral salpingo-oophorectomy 1
Supravaginal hysterectomy with bilateral salpingo-oophorectomy 1
Unilateral salpingo-oophorectomy 14
Unilateral salpingo-oophorectomy with suspension 1
Marsupialization 3
Plastic to vagina 2
Appendectomy 8

X-ray: Post-operatively to 3 cases.

Serous Cystadenomata, 20 Cases

Associated Conditions

Bilateral	3	Serous cystoma	1
Torsion of pedicle	4	Parovarian cyst	1
Papillary outgrowths	11	Myoma	4
Intraligmanetous	1	Pregnancy	1

Size, largest filled entire abdomen; smallest, 7 by 5 cm.

Age		*Age*	
15-19	1	40-49	4
20-29	5	50-59	5
30-39	3	60-69	2

Parity: Nulliparæ, 7; Multiparæ, 13

Operations

Total abdominal hysterectomy with bilateral salpingo-oophorectomy	1
Supravaginal hysterectomy with bilateral salpingo-oophorectomy	8
Fundal hysterectomy with excision of intraligamentous cyst	1
Unilateral salpingo-oophorectomy	7
Bilateral salpingo-oophorectomy	1
Bilateral salpingo-oophorectomy with suspension	1
Marsupialization	1
Appendectomy	11

X-ray: To 3 cases post-operatively.

Malignant Cysts, 12 Cases

(Papillary cystadenocarcinoma)

Associated Conditions

Distant metastases	1	Fibromyoma	1

Size, largest, 25.0 cm.; smallest, 10.0 cm.

Age		*Age*	
30-39	1	50-59	4
40-49	3	60-69	3
70	1		

Parity: Nulliparæ, 3; Multiparæ, 9

Operations

Supravaginal hysterectomy with bilateral salpingo-oophorectomy	3
Unilateral salpingo-oophorectomy	4
Bilateral salpingo-oophorectomy	1
Partial oophorectomy	2
Exploratory celiotomy	2

X-ray: To 10 cases post-operatively.

Endometriomata of the Ovary, 8 Cases

Associated Conditions

Bilateral	4	Chronic salpingitis	1
Fibromyoma	2	Serous cystadenomata	3

Age		*Age*	
15-19	2	30-39	5
40-49	1		

Parity: Nulliparæ, 5; Multiparæ, 3

Operations

Supravaginal hysterectomy with bilateral salpingo-oophorectomy	6
Bilateral salpingo-oophorectomy with suspension	1
Unilateral sapingo-oophorectomy with suspension	1
Appendectomy	4

X-ray: To one case post-operatively.

Granulosal Cell Tumors, 2 Cases

Associated Conditions

Fibromyoma	1

Size, 9.0 and 25.0 cm.

Parity: Both multiparæ

Operations

Supravaginal hysterectomy with bilateral salpingo-oophorectomy	2

X-ray: To one case post-operatively.

Krukenberg Tumor, One Case

No associated malignancy in the gastro-intestinal tract was discovered.

Age, 57 years. Multipara.

Operation: Right oophorocystectomy.

X-ray: None.

The patient died five months after operation outside of the hospital.

Cysts of Undetermined Nature, 10 Cases

(In these cases the lining of the cysts had been destroyed either by circulatory changes or infection.)

Associated Conditions

Torsion of pedicle	1	Fibromyoma	1
Intraligamentous	1	Adenomyoma	1
Benign	9	Pregnancy	1
Questionably malignant	1	Parasitic cyst	1

Size, largest, filled abdomen; smallest, 3.0 cm.

Age		*Age*	
15-19	1	30-39	1
20-29	4	40-49	4

Parity: Nulliparæ, 3; Multiparæ, 7

OPERATIONS

Abdominal panhysterectomy with bilateral salpingo-oophorectomy	1
Supravaginal hysterectomy with bilateral salpingo-oophorectomy	1
Supravaginal hysterectomy with unilateral salpingo-oophorectomy	1
Unilateral oophorectomy	1
Bilateral oophorectomy	1
Partial excision	1
Marsupialization	3
Appendectomy	2

X-ray: To one case post-operatively.

In 1936 Carpenter (1) read a most illuminating paper before the Section on Gynecology and Obstetrics of the Society in which he gave a summary of pathologic diagnosis on sections received at his laboratory for diagnosis. The specimens were sent from 11 general hospitals and from physicians doing office practice and represents one year's work (1935). Out of 2,933 surgical specimens received 1,137 (38.4 per cent) were from the female pelvis. The ratio was as follows:

Percentage of gynecologic specimens examined.

		Per Cent			Per Cent
Ovaries	322	28.3	Cervices	193	16.9
Fallopian tube	231	20.3	Curettings		
Uteri	218	19.1	Uteri	173	15.2

His observation was that a higher percentage of specimens from the female pelvis were received from the hospitals that did not have a gynecologist on the staff. In studying these figures one is struck with this inverse ratio. It seems incredible that there should be almost twice as many ovaries submitted for diagnosis as uterine scrapings.

The microscopic diagnosis of the ovaries follows:

Follicular cysts	179	Serous cystadenoma	3
Simple cyst	36	Cystic adenocarcinoma	2
Corpus luteum cyst	33	Krukenberg tumor	2
Chronic oophorotis	32	Fibroma	2
Hemorrhagic cyst	16	Dermoid cyst	2
Pseudo cystadenoma	6	Granulosa cell tumor	1

The three most frequent diagnoses total 248 or 78.9 per cent of the specimens and these might well be considered normal states of the ovary.

The fourth was usually associated with pelvic infection. Carpenter (2) has repeatedly pleaded for an attempt at differentiating between physiological and pathological states, by pathology meaning a lesion, the removal of which leaves the patient in an improved state of health.

H. C. Taylor (3) thinks that with an ovarian mass under 5 cm. in diameter in women before the menopause, the probability of the ovarian conditions being benign is so great that a period of observation is indicated. This period with only symptomatic treatment is variable, depending on the severity of the symptoms, before any operation is justifiable.

S. C. Mueller (4) in an attempt to determine what proportion of ovarian tumors, particularly cysts, causes functional abnormalties in the menstrual cycle, reviewed the findings in 186 cases that had a diagnosis involving the ovary. In these 102 had normal menses, 17 were past the menopause and 21 were normal but had hypermenorrhea. Only 40 had irregular menses.

E. Von Graff (5) reports 6 instances of torsion of the pedicle of ovarian cysts following delivery and 4 in non-pregnant women. All had rapid growth of the tumor after this. It may not cause immediate acute symptoms.

W. T. Murphy (6) believes that primary malignant neoplasm of the ovary presents a complex study because of differences in research data regarding their embryology and histologic transformation. He thinks that most ovarian malignancies arise from germinal epithelium or from benign tumors of this tissue that have become malignant. Others arise from embryonic rests and ovulogenic enoplasms.

Schiller (7) finds that the chief difficulty in orderly classification is that the tissue of the tumor differs greatly from the tissue of the ovary. He cites the pseudo-mucinous cystoma, the disgerminoma and the serous cystoma as examples. The exceptions are the fibroma, which corresponds to the stroma of the ovary and the granulosa cell tumor which corresponds to cells in the follicle. In order to find an acceptable explanation as to how heterotopic tissue of origin (of the tumors) came into the area of the ovary, he wisely makes use of recent data on the embryogenesis of the ovary. Fischel demonstrated that the predominant part of the germinal cords develops from differentiation of the mesenchymal core of the gonad. Greenwald proved that only a small portion arises from the surface epithelium in the form of the so-called secondary germinal cords. Then the granulosa is primarily of mesodermal and mesenchymal origin. Schiller calls attention to the fact that if the ripe epithelial granulosa arises from the mesodermal tissue and secondarily differentiates into epithelial forms that tumors of the early tissue would have the character of connective tissues and the structure of epithelium in the mature tissue. Tumors arising from both types of tissue would

show both epithelial and connective tissue which would explain the incorrect diagnosis of sacro-carcinomata.

The germinal cells develop in the dorsal portion of the primordial gut and passing the mesenterium they enter the undifferentiated mesenchyme of the gonad through the hilus. The "parenchyma is histologically undifferentiated yet cystologically sexually determined." Thus is the embryonic ovary it possesses the potential capacity to form granuloca. Departures or interruptions of this process can explain the origin of the solid tumors of the ovary.

If we review in detail the development of the genital tract remembering that by fusion and absorption and growth different levels of the Mullerian system form the various organs of generation, we have an explanation of the origin of the other tumor of the ovary. Thus the embryologists have given us the most dependable and plausible basis of ovarian tumor classification.

It is difficult to give criteria for the removal of ovarian tumors. Usually it is some complication that requires immediate surgery. Such conditions as a twisted pedicle, hemorrhage into or from a cyst, infection and evidence of malignancy are such complications. But they are usually accompanied by pain and rapid increase in size of the mass. Williams in his textbook strongly advocated the removal of cysts when pregnancy is a complicating factor. As a rule one is able to study these tumors for some months and can separate the inflammatory masses and the physiologic cysts from the true proliferative type. Rarely is one justified in advocating surgery following only one examination. By withholding operation in questionable cases we lower the incidence of piece meal surgery.

In the event of laparotomy the most important question is how much to remove and what to leave. A thorough knowledge of physiology and pathology is the only answer. The removal of a sound ovary in the presence say of one of the "sex" tumors of the other ovary is not to be condoned. Just so the leaving of an apparently healthy ovary in the presence of a carcinoma of the other ovary or when a chorioepithelioma is present is dangerous breach in knowledge. The proper handling of the ovary in the presence of endometriosis is absolutely dependent on a knowledge of harmonology. Unfortunately benign organs that have been removed cannot be replaced, nor can malignant organs that have been left in be satisfactorily treated by Roentgen rays.

All of which emphasizes the original premise. Operate only when the symptoms and findings demand such a course and once operation is elected remove only that which is diseased and leave only that which is healthy.

Bibliography

Carpenter, C. C.: Trans. Med. Soc. State of North Carolina, Page 236-242, 1936.

Carpenter, C. C.: Sou. Med. & Surg. 97: 85-86.

Taylor, H. C.: Am. J. Surg. 33: 358, September 1936.

Mueller, S. C.: Minn. Med. 19: 361, June 1936.

Graff, E. Von: J. Iowa M. Soc. 25: 118, March 1935.

Murphy, W. T.: S. G. & O. 61: 289, September 1935.

Schiller, J. Obst. & Gyn. of British Empire 43: 6, July 11, 1935

President Johnson: Gentlemen, the next and last paper on this morning's program is by Dr. Charles R. Bugg of Raleigh, "Some Aspects of the Diphtheria Problem."

Dr. Charles R. Bugg: Gentlemen, I will follow in Doctor Ross' footsteps with a very brief paper. I promise not to keep you long.

Dr. Bugg then presented his prepared paper. (Applause)

SOME ASPECTS OF THE DIPHTHERIA PROBLEM

Charles R. Bugg, M.D., Raleigh, N. C.

This subject should be an obsolete one. There should be no more occasion for a discussion of diphtheria than there is of smallpox. But unfortunately the subject is a very live one, and I think there is a definite need for discussion of it.

I shall confine my remarks to three aspects of the problem—first, the diphtheria situation in North Carolina; second, recent ideas about methods of immunization; and third, a presentation of our experience in Raleigh with laryngeal diphtheria over a period of twelve years.

The splendid work of the State and local boards of health in the effort to eradicate diphtheria is well known to all of you. Through their activities thousands of children have been immunized and the public at large has been informed about the preventable character of the disease. In discussing the diphtheria situation in North Carolina I shall attempt to present the facts to you from the point of view of the practioner of medicine who sees the cases. Perhaps there is a virtue in this as compared to its presentation to such a group as this by a public health officer.

In the year 1937 there were reported to the State Board of Health 2,056 cases of diphtheria with 166 deaths. This figure may surprise you and someone may say 'That was a bad diphtheria year." But the record shows that in 1936 there were 2,347 cases; in 1935, 1,720 cases and in 1934, 2,114 cases. What sort of record is this as compared to other states? The figures show that it is bad. We have not been better than eighth from the top in total number of cases in the forty-eight states for the past four years, and have consistently lead the South Atlantic States.

Lest you say "The boards of Health should remedy this situation," I say that I am going to try to show you that the practitioners of medicine in the State are the only group who can remedy it.

It is impossible to accurately prove but there are substantial facts in the statistics tending to show that practically all the cases are occurring in rural sections or in areas with a large laboring class of people. This is the group who are failing to avail themselves of preventive measures through ignorance, carelessness, or suspicion. At least 90 per cent of our cases in the past eight years have occurred in children from rural areas. I have questioned almost all of the parents about the reasons for failure to immunize the children. The three reasons cited above (ignorance, carelessness, or suspicion) explain all the failures. This group of people cannot be reached by health publications, vaccination campaigns, or newspaper publicity. In my opinion the one avenue of approach to them is through the family physician. He has their confidence; he knows their mental processes; he knows their language. They will trust his advice. I am confident that, if he could see the immense possibilities for good and could feel the truth of his responsibility in connection with diphtheria prevention, we could eradicate this disease. The Boards of Health must and will continue to push their work. I am enthusiastically for legislation making immunization under a year compulsory; but nothing will solve this problem without the help and coöperation of the general practitioner (especially rural).

I often wonder how many immunizations of children in this State have been *initiated* by the family physician. There is certainly no reason why he should hesitate to push this matter for fear of being accused of "drumming up" business. The pediatricians are constantly hammering on it. You can put it over. We know. We are doing it every day.

There has been much interest in the past few years in methods of immunization. The history of diphtheria prevention is as dramatic as any in the history of medicine. The steps from 5 dose horse serum toxin antitoxin through soluble toxoid to alum precipitated toxoid have been watched with great interest. Recently interest has been focused on the occasional occurrence of clinical diphtheria in previously immunized children, and in previously Schick negative children becoming Schick positive. The literature in recent years contains many valuable studies of this phenomenon. Without going into the details of these studies the following facts seem to be accepted. There is an occasional child who will partially lose his immunity after a period of years. There are more of these in the group who received one dose of alum precipitated toxoid. This preparation (alum precipitated toxoid) produces a quicker immunity than other preparations, and one dose is superior to one dose of other toxoids. However, one dose is not sufficient to certainly produce a permanent immunity. It therefore seems wise to give 1 cc of toxoid (alum precipitated, or soluble) followed in about one month by a second dose of 1 cc. The infant should then have a Schick test in 6 months.

If this is positive he should receive an additional dose. If the Schick is negative this should be repeated in about one year. If the busy practitioner feels it impossible to keep this perfect contact with these patients it might be said that two 1 cc doses of toxoid, a month apart, will permanently immunize such a tremendous percentage that the problem will be solved.

It is of great importance to realize that diphtheria is a young child disease. The bulk of the cases are between the ages of one and three. Practically all of the laryngeal cases fall in this age group. For this reason the toxoid should be given so that immunity can be established before the baby is one year old. Yet there is a definite reason for not giving it too early. Infants possess natural antitoxin up to the age of six to seven months. If toxoid is given at five or 6 months there is a possibility that some of it may be quickly neutralized by this natural antitoxin. A good routine is: 1 cc at eight months and 1 cc at nine months. In our experience there has been only one case of diphtheria under ten months of age.

It might be wise, by way of parenthesis, to state that individuals over eight years of age react rather violently to alumn precipitated toxoid, and should be given soluble toxoid or toxin antitoxin. It can be stated most emphatically that any of these products may be given to *infants* with impunity, as all forms of reaction are so mild as to be negligible. We have never seen an abscess in thousands of injections, and it is rare for an infant to react enough to even stimulate a mother to take recourse to a telephone call, the usual irrisistible maternal impulse.

We have had an interesting experience in Raleigh with laryngeal diphtheria in the past twelve years. In 1931 I reported before the Pediatric Section of this Society, on seventy-eight intubated cases of laryngeal diphtheria. Since that time we have seen sixty-seven hospital cases—sixty-five of which were laryngeal. We have been much impressed with the marked difference in severity. Of the original group of seventy-eight cases it was necessary to perform tracheotomy on only two. With much the same plan of handling the cases, tracheotomy has been necessary in the last seven years on twenty-seven out of sixty-five cases, and the mortality has been 18 per cent as compared to 12.2 per cent in the earlier group. In addition to this it has been possible to make a clinical diagnosis of tracheo-bronchial diphtheria in an increasing number of these. The tendency of the diphtheria bacillus to involve the lower air passages has been very marked. There have been four cases this year with positive cultures from tracheotomy tubes and negative cultures from throat. This is, of course, the reason for the necessity to do so many more tracheotomies, and for the much greater mortality. This difference in result is also in spite of the fact that the physicians are referring the cases much earlier and in better condition on admission.

I have stated before that at least 90 per cent of these cases were

rural. There were only five cases of diphtheria reported in Raleigh last year in 50,000 people.

From the whole group of 143 cases certain outstanding facts are of interest:

1. Only two of these children had had any form of immunization and not one had had a Schick test.

2. Laryngeal diphtheria under any method of handling has a big mortality or a slow recovery.

3. Absence of visible membrane in the pharynx by no means rules out laryngeal diphtheria. All cases of laryngeal obstruction, not known to be immune, should receive intramuscular antitoxin immediately.

4. (And this is important) Diphtheria antitoxin even in adequate doses, is quite slow in affecting the breathing. We have never seen any effect under eighteen hours and have had to intubate as much as forty-eight hours after adequate doses. In fact one child developed laryngeal diphtheria twenty-four hours after receiving antitoxin for pharyngeal diphtheria, and required intubation. If the textbooks or the movies have led any to expect a dramatic result from antitoxin in laryngeal diphtheria, they were not talking about North Carolina Diphtheria, or any other kind I have ever seen.

5. In spite of a potent specific theraphy, diphtheria is a treacherous disease, troublesome, and dangerous. It is infinitely better to prevent than attempt to treat.

I think it is of interest to speculate about the causes of the increased severity of diphtheria. We have undoubtedly, as one factor the tendency of all epidemic diseases to run in cycles. We are all familiar with the lessened virulence of Scarlet Fever during the past fifteen years as compared to the cases that used to occur. This tendency of diseases to run in virulent cycles over a period of years, and then to experience a period of lessened virulence, runs through all medical history.

I believe, however, that there is another factor which is more within our control. We know that before the general use of any immunizing agents against diphtheria, there was a marked tendency for the population to develop a natural immunity as later childhood and adult life was reached.

The figures for susceptibility in the urban areas were about these: one to three years, 100 per cent; ten years, 50 per cent; adult life 10 to 15 per cent. This natural immunity was the result of repeated exposure to diphtheria bacilli in small doses, such as in the throats of carriers. In one of the years just following the World War, a study revealed that 4 per cent of the public school children in Baltimore were carriers of virulent diphtheria bacilli. Undoubtedly such a study now would show no such percentage. It seems reasonable to assume that an individual now would be much less likely to develop a natural immunity such as previously occurred. It also seems reasonable to assume that,

from repeated mild exposure, children used to develop a partial immunity which was not strong enough to render them Schick negative. All this points in my mind to this conclusion: That while a non-immunized child now has a vastly smaller chance of being exposed to diphtheria than formerly, he at the same time, also has a greater chance of contracting the disease if exposed, and if he does, he has a greater chance of having a virulent form of the disease. In addition to this he has a greater chance of remaining susceptible to diphtheria when he reaches adult life. So that, instead of the widespread immunity among artificially immunized children relieving us of the dangers of diphtheria, it actually, in one sense, makes it more urgent for us to leave no child susceptible.

President Johnson: We will hear further announcements.

Secretary-Treasurer Long: The Radiological Society will meet at two p.m.

Announcements.

President Johnson: Gentlemen, that concludes our morning's program a half hour before lunch, but it is hoped the luncheons will start promptly so we can begin the Section meetings this afternoon as early as possible. In the morning we have a full program for our General Session, including the election of the Board of Medical Examiners, so I hope everybody will try to be here on time.

We are adjourned.

Whereupon the session adjourned at 12:30 o'clock.

SECOND GENERAL SESSION

WEDNESDAY MORNING

May 4, 1938

The Session convened at 9:30 o'clock, President Johnson presiding.

President Johnson: The meeting will come to order.

The first paper will be, "The Function and Field of the Family Doctor," by Dr. W. J. Lackey of Fallston, from the Section on General Practice of Medicine and Surgery.

I may say for Doctor Lackey that he is Chairman of that Section, and that I requested that he present this paper. I felt that since this was the first year this Section was functioning it was the proper thing for the Chairman to represent the Section. So he didn't put himself on. We did it for him.

Doctor Lackey.

Dr. W. J. Lackey then presented his prepared paper entitled, "The Function and Field of the Family Doctor." (Applause.)

THE FUNCTION AND FIELD OF THE FAMILY DOCTOR

Walter J. Lackey, M.D., Fallston, North Carolina

Although the term family doctor and the term general practioner are commonly used interchangeably, a doctor may be a general practioner and not be a family doctor. Nowadays, in a good many families, each member employs a different general practioner; and, in perhaps the majority of families, it is the custom for the head of the household to decide that this or that special line of service is needed and to choose the specialist without thinking of consulting the doctor whom he more or less regards as his family doctor.

Now and then when the question comes up of what a doctor doing general medical practice should undertake to do in diagnosis and treatment, somebody says he should do what he is competent to do or what he is capable of doing. This does not help much. Nobody is entirely competent and nobody is absolutely incompetent, be he general practitioner or specialist; so middle ground must be found. The rule of reason is to do what one has reason to believe he can do reasonably well, and for the great majority it must be at reasonable, or unreasonably small, cost.

Without this prelude I would not hope to convey my idea of the essential feature of the function of a family doctor, which is that he must have the decision of all the health problems of the family. Unless all the health problems of a family are in a doctor's hands, and unless he is consulted and his advice followed every time it is decided that any member of the family needs a doctor's services, however much general practice he may do in a family, he is not that family's doctor unless he is consulted about father's beginning baldness, about mother's fear that she is pregnant again, about Tommie's mouth-breathing, about Ned's boils, about Susan's dimness of sight or headaches ascribed to eye defects, about Charlie's broken leg or flattened arches, and about feeding Baby and her three-months colic and her failure to get her first tooth on time.

There is more to what is necessary to make a doctor a family doctor. Few, perhaps none, of us do our best toward establishing and maintaining this relationship, which imposes on both doctor and family a number of obligations which are discharged in a few cases only.

A family doctor should have a detailed written record of the findings made at an examination of every member of the family in a state of health, and the essential features of every illness, whether treated by himself or another. This should include a report on the Wassermann reaction of the blood of the head of the house. However, he should not regard a positive report as positive proof of syphilis. He should take note of the proneness of certain families to cancer, tuberculosis, diabetes, Bright's disease, mental disease, broken bones and bleeding. A great

number of these health records he should be able to have from a period a few months after the patient was conceived. He should take the initiative in noting when children or adults are in need of innoculations or other measures of protection against communicable diseases and notifying them to come in at the proper times.

He should do his best to trace every case of syphilis, tuberculosis, and typhoid fever to its source and to locate and examine all those who have been intimately exposed. Pigmented moles should be removed as soon as discovered. He should see at a glance that Baby's eyes are crossed, ear is running, feet clubbed or that she or he has a harelip; and even though he was called to see another member of the family, he should assume responsibility then and there for exerting continuous pressure to the end that corrective measures are carried out at the proper time. He should instruct his families in the broad principles of nutrition and call attention to violations of those principles which come to his attention. He should make it a part of his daily practice to preach the cow, the vegetable garden, and the home orchard as sources of food for every family that can possibly have them.

On the appearance of a dangerous communicable disease in the community he should take appropriate steps on his own initiative advising against mingling with others if that measure be wise and feasible, that small children be especially protected in certain epidemics, that older members who have not heeded the routine requests to come in to be reinoculated, or, when so it is, assuring that the danger is slight or that there is really nothing to be done about it and that the worst possible thing is to get panicky.

It would be well for family doctors to offer their services through their County Medical Societies for giving courses in elementary anatomy, physiology and hygiene in the public schools. In this way future men and women would be prevented from following medical delusions; and the presence of doctors at intervals might influence school nurses and teachers to send notes to parents of pupils who seem to be ill suggesting that the family doctor be consulted, rather than make their cock-sure diagnoses and refer to specialists for treatment.

As a part of the home care, any member of the family with symptoms which may mean tuberculosis or who has been exposed should have the skin tuberculin test and those reacting positively have X-ray examination. In the schools, by arrangement with the School Boards, these examinations may be given those who have not had such care in the home. The skin test is cheap and not a great number would need any further test.

It is within the province of the family doctor to warn against the danger of certain exercises, amusements, sports and fads; against poisoning by hair dyes, against being blown up by fireworks, against making electric contact while standing in water, against (grandmother particularly) using the bathtub without putting a rubber mat or a towel

on its bottom, against using steps that are wobbly or that have no railing; against the dangers of tetanus from puncture wounds especially when they are made about the barnyard. It is part of his job to tell his families that a dog that has bitten a person should not be killed but kept up and observed, that the chance of the dog having rabies is very slight and if it has rabies it will die of it in plenty of time to begin the protective inoculations. The only exception to this is in case the bite is about the face. If the dog is killed and the head sent to the State Laboratory for examination, in case of any doubt the report must be positive. It is not feasible to get another specimen at a later date, and with a disease which, once developed, is invariably fatal, no chances can be taken.

The State Board of Health is considerate of our rights, but, as to tuberculosis, it seems to ignore the fact that, since there is not room in the sanatoriums most of the tuberculous must get treatment in the home if at all. According to the Health Officer of Kentucky, speaking in the 1937 meeting of the Medical Society of his State:[1] of a plan carried out some years ago by the practitioners of Scott County under the direction of the County Health Officer:

"That plan is the best that has been devised in the United States. It is more economical, it is more effective, it is more satisfactory to the profession and to the public. During all the years that Dr. Stewart was health officer of Scott County, only one case was sent to a sanitarium. The death rate was reduced from thirty-nine in the five years before to thirty-two in the next five-year period, and after the program had extended for fifteen years to eleven, and then to nine. Cabins or sleeping porches were built for the segregation of the cases that were found in the early stages of the disease; collapse therapy was done where it was necessary to do it; the management of the cases was continued under their family physician; the patients were properly managed; the nursing care was given by the nurses of the health department. This has been effective and it has worked."

The family doctor should not hesitate to counsel parents when he sees an attachment developing between their child and one of such heredity that he knows the risk of disease in possible progeny will greatly exceed the average.

The family doctor as a general practioner should, himself, manage the vast majority of pregnancies and deliveries in his practice, repair the perineal and cervical tears, plan and supervise the feeding of the babies and circumcise the boys. He should decide whether and when a child's tonsils should be removed. He should have an eye on the child's school progress, and if it is not up to average think of lack of application, poor mentality, poor sight, poor hearing, or anemia, rather than tonsils, as the probable cause. He should find the trouble and if it is not beyond remedy give or recommend the appropriate treatment.

[1] Kentucky *Medical Journal,* April 1938.

Here the thought comes up that appropriate treatment must not be wasteful. Many drugs in common use cost from three to ten times as much under one name as under another, and some old cheap drugs, for examples, bromides and chloral, are as good or better than modern substitutes. Sometimes when we send a patient to a specialist with a report of what we are doing for him we get a note approving of our diagnosis and treatment; but the patient comes back with prescriptions for the same things we were giving, or virtually the same, put up by a different firm, under a new name, and the druggist has to send off for the medicine, making it great stuff.

The family doctor could properly advise heads of his families as to choice of home sites, as to prevention of surface contamination of wells and springs, as to care of milk and other perishables, as to draining ponds and screening houses.

He should have a neat, comfortable, well-appointed office and a small laboratory, and an office assistant capable of doing the easier and commonly used laboratory examinations. If at all feasible, and it nearly always is, he should have one or more associates in practice or assistants. Most everybody hates to have his ignorance or carelessness exposed. Then it's good for the people and for the doctor to have it known that in case one doctor is sick or for any other reason can not come to their aid, another is to be had from the same office and more or less familiar with the situation. Also, a number practicing together can afford to buy equipment that would be beyond the reach of one alone and one can become proficient in one field and another in another field, without making either a poorer family doctor. A thing that would fit in well would be having recent graduates work a year under selected family doctors and be credited the same as though they had served a year's internship in selected hospitals. This would work well both ways. Each would teach the other.

The family doctor should welcome consultations. A good plan is to have an understanding with the heads of houses that if at any time they want a consultation, they must feel free to say so; and, if you want a consultation, you will say so. While the doctor in charge should have the choice of consultant he should not object to consulting with any reputable doctor. The same rules apply to referring patients, with certain additions. It would be to the advantage of patients, specialist, hospital, and family doctor that the family doctor be promptly informed of the results of examinations and further plans, and kept informed. In case the doctor to whom the patient is sent, say a surgeon, decides that other services, say those of a pediatrician, are needed, it will be well to notify the referring doctor before making the arrangement. The referring doctor or the family may have some choice as to what pediatrician, or the family doctor may be a pretty good hand with sick babies himself. Finally, in this connection, it would seem that some occasions arise when a specialist could appropriately call a family

physician into consultation or refer a family to one of us. Relatives and friends commonly ask the referring doctor how the patient is getting on and are not satisfied when he has to tell them he has no news. It is not too much to ask that he be sent a transcript of the specialist's record of his patient, and such transcript is essential to the further discharge of his function as family doctor. I believe it would not only be good Medicine and save the people in days of illness and money in pocket, but good business, too, for specialists of all kinds to let it be generally known that they regard it as their function to treat only those conditions which present unusual difficulty in diagnosis or treatment, and to accept patients only as referred by their doctor.

The family doctor is a general practitioner somewhat in the position of a lawyer who is retained regularly, with the significant difference that the lawyer is paid a retainer fee. Always he serves many as general practitioner *only*. For these he does only odd jobs, even though they never consult any other doctor.

Speaking of lawyers, did it ever occur to you as strange that the lawyers who, in court, show so little consideration for doctors who are not specialists, are themselves general practitioners of law? There are probably not 50 specialists in law in the State, and they by the simple process of limiting their practice rather than by taking special post graduate courses in The Law.

Whether as a general practitioner or as a family doctor, the non-specialist doctor should do, and he should be encouraged in doing, a great deal of the work among his patients that is going to the specialists. The more he is encouraged to do the more he will equip himself to do. There is little danger that he will undertake matters beyond his ability. In a medical meeting held this year a specialist compared a general practitioner who undertook to decide which conditions should go to a specialist with a druggist who says: "I'll give you bicarbonate of soda. If I find you have a cancer I'll send you to a doctor." I do not accept this as a just comparison. Many of those in high places in Medicine are giving their opinions that general practice is the main part of medicine and the making of general practitioners the chief function of a medical school. In an address[2] to the Annual Congress on Medical Education held in Chicago two years ago, the Dean of the University of California Medical School had this to say: "To meet the medical service needs of the modern community the medical school must be prepared to train four groups of graduates. The first group consists of men whose temperaments and aptitudes fit them to replace the vanishing general practitioner; men able to administer all available medical services to individuals and to families. Such graduates must know their own capacities and limitations; they must consider community preventive measures and personal and family hygiene as equally important with diagnostic procedures and therapeutic management. It is

[2] The *Diplomate*, November 1937.

important that such practitioners should know how to bring, with skilled judgment, all needed services of specialists to their patients in the right way and at the right time. A physician so trained, and having integrity, will know how to act as a friendly health adviser to individuals and to families; and how to be a coöperative colleague to the health officers of the community.

"Second, every medical school should be prepared to train a part of its student body to engage in public health activities. A third obligation concerns its duty to provide a *limited* number of well-trained specialists, and to revise present conceptions about what constitutes proper fields for specialization. *Today by far too large a proportion of medical men are specializing.* Finally, it is of the utmost importance that the need for highly trained investigators and teachers be remembered. No student body will develop more than a few such men.

"Communities have not been getting a fair quota of the general practitioner type of medical servant. Today every student is taught by a score of specialists, each one armed with his own textbook and journal. Certainly a curriculum representing a mosaic of independent specialist courses does not, nor can it, reflect such a philosophy; nor is it likely to guide students to the opportunities that can best be used to form backgrounds essential to the creation of great medical practitioners."

With the yearly large addition to our ranks of well-trained young men, with confidence in themselves, a confidence based on what they have learned to do under the guidance of first-class men, the unnecessarily referred work will be less and less. The family doctor will discharge his function better and better; and the specialist will, also; for, his time not being taken up with the common run of practice, he will be able to devote his time and talents to the more obscure and more difficult—real specialization.

And, the people getting better medical care at less cost, agitation for a different system of doctoring—for State medicine or anything of that sort—will rapidly peter out.

As a last word, though, let me call your attention to a fact that many without experience in general practice forget or never knew, as shown by indiscriminate blaming of the general practitioner for not getting every patient with cancer, or appendicitis, or glaucoma to the specialist on time. The fact is: the general practitioner can advise, he can warn, he can urge; but he can not compel.

President Johnson: Gentlemen, I wish we had time to discuss this paper, but the limits of our time this morning won't allow that.

Although I am not a pacifist, I do believe in preparedness. As soon as I found out that I was to have charge of the destinies of this Society, knowing that the success of the program depended to a great extent upon our guest speakers, at the very beginning I began to select two men I thought would be good. I think you will agree that the one

we had yesterday morning filled the bill, and the one this morning you will find just as good.

I am going to ask Dr. Donnell Cobb, a surgeon, who is one of the brightest ornaments of the North Carolina profession, to introduce our guest speaker this morning. (Applause.)

Dr. Donnell B. Cobb (Goldsboro): Mr. President, this is a pleasure, and I thank you for the honor.

Ladies and Gentlemen: Our eminent guest speaker this morning is known to some of you personally. He is well known to all of us by reputation. Formerly president of his county, district, and state societies, a member of the Southern Surgical Association, formerly vice president of the American College of Surgeons, and immediate past-president of the American Medical Association, he has long been prominent and a leader in our profession. As a visitor to his clinics I have been impressed by his surgical dexterity, his diagnostic acumen, and his unusual ability as a teacher.

His frequent and very interesting contributions to the literature embrace almost the entire field of surgery, and he has been particularly interested in diseases of the biliary system. He was the first to describe the liver deaths that occasionally follow operations on the bile passage.

From his unlimited experience he will speak to us authoritatively on the essentials in abdominal surgery, as Professor of Surgery at Columbia University and director of surgery at the New York Graduate Medical School and Hospital.

It is my pleasure to present to you Dr. Charles Gordon Heyd. (Applause.)

Dr. Heyd then presented his prepared paper. (Applause.)

CLINICAL ESSENTIALS IN ABDOMINAL DIAGNOSIS *

Chas. Gordon Heyd, M.D., F.A.C.S., D.M.Sc.
Professor of Surgery
New York Post-graduate Medical School—Columbia University

Toward the end of the sixteenth century, about 1601 or 1604, there was born in Spain a male child to be christened Baltasar Gracian, who became a member of the Society of Jesus, and was what we may call an university man. After many vicissitudes and approaching fifty years of age he published a small book of 300 paragraphs and called the Oraculo Manual y Arte de Prudencia. Recently this volume has been rendered into English by Martin Fischer of the University of Cincinnati. The subtitle to the brochure is "A Truth Telling Manual and the Art of Worldly Wisdom." Paragraph xvi may be taken as the thesis of my paper—"Knowledge with good intent . . . assure the success of every undertaking: science without understanding, compounded madness."

With discovery and invention in the field of physical science there came into being innumerable instruments of precision.

Many of them have been incorporated into the diagnostic practice of medicine. The unending list of new instruments in the field of physical diagnosis and clinical interpretation has created a huge armamentaria for many scientific procedures. Discovery and research in the field of chemistry have bestowed upon clinical medicine an ever increasing list of tests that dumfounds the specialist, to say nothing of the general practitioner. The diagnostician has become lost in the congeries of laboratories and the field of clinical medicine has been adumbrated by the multiplicity of diagnostic aids. The phrase "work up" has become synonymous with expense, hospitalization, and erudite excursions in chemistry, biology, and physics. The cost of medical practice has risen in successive waves as overhead has to be met and technicians and assistants employed to prepare, to perform, and in many cases to interpret all of the data that is presented to the master diagnostician for analysis. Lord Horder while visiting the United States in 1935 was in the habit of telling with considerable gusto a little anecdote as an accompaniment to his exhortation for the practitioner to return to clinical medicine. According to Lord Horder, a rather perspicacious individual came to him one day and sitting in his consultation room, asked the doctor for something for his headache. Lord Horder indicated that headache was a protean manifestation and might be a concomitant symptom of an almost endless number of maladies, and furthermore that the determination of the etiological factor of headache might involve considerable time, study, and expense. Whereupon the would-be patient, with a noncommital smile, replied "My dear Doctor, all I want is something for my headache; I cannot afford a diagnosis."

There is a huge literature of pseudo-scientific medical information. The physicians hears it, reads it in the press, and occasionally from the lips of the newly arrived interne. Nonsense, though repeated endlessly, is still nonsense. A judicious attitude of mind is encumbent upon every practitioner in order to evaluate new procedures that may prove to be useful in clinical medicine. It is easy to be indifferent and accept a neatly tailor-made diagnosis derived from the erudition of those who labor in laboratories remote from the field of practice. How often is an unproven statement, or some percentage of medical calculus, when given with the emphasis of authority, accepted without question and yet offer no real contribution to the clarification of disease. Such pseudo-science often masquerades as an effective reality. The late Dr. Osler tells of a very interesting episode in his essay, "Nurse and Patient." It appears that Dr. Osler one day was late for a consultation with one of his surgical colleagues. Finding that the surgeon had seen the patient Dr. Osler turned to the nurse in attendance and asked in a humble tone what he had thought of the case. She promptly replied, "He thought

there were features suggestive of an intra-canalicular myxoma." Osler looked anxious and queried, "had she happened to hear if he thought it had an epiblastic or mesoblastic origin?" The daughter of Eve never flinched; "mesoblastic, I believe," was her answer.

Of outstanding importance is the history and the practice and art of physical examination. When the statistical method was applied to the study of disease it became apparent that the majority of abdominal maladies were associated with rather characteristic symptoms; yet, it is not an uncommon experience in our well organized hospitals to find that the patient has been completely "checked off" by X-ray and chemical procedures without at any time having had a physical examination.

The gastrointestinal canal from the cardiac orifice to the anus is endowed with two primary functions: (1) the ability to secrete various chemical entities and (2) the ability to move material caudad after varying periods of physiological stasis or rest. Of these two functions impairment of the motor mechanism by inhibition of normal peristalsis or by obstruction is outstanding in its importance, and lethal in its implication. Many individuals may continue to function over long periods of time with major deficiencies of secretion without showing either marked deterioration in health or syndromes of disability, but few people survive for any length of time with an obstruction of the bowel. The entire physiological processes of the gastrointestinal tract are carried on beneath the threshold of consciousness of the individual and when at any moment the patient becomes conscious of his gastrointestinal tract, at that moment he has some deficiency in the physiological integrity of the gastrointestinal tract. The initiatory symptoms of gastrointestinal disease vary individually within rather wide limits but in the main the pattern is distinctive. The commonplace aphorism attributed to Deaver that gall bladder disease is represented by the patient "fair, fat and forty, belching gas"; that the periodicity of recurrent epigastric pain invites attention to duodenal ulcer; that the vomiting of food remnants suggests pyloric obstruction; that pronounced anemia, with minor gastric symptoms may be ascribed to pernicious anema, or carcinoma of the stomach, or carcinoma of the right side of the abdomen; that changes in bowel sensibility, with frequent repetitive, explosive rectal evacuations to rectal and recto-sigmoidal malignancy; that symptomless jaundice indicates hemolytic jaundice; that jaundice without pain is liver jaundice; that jaundice with pain usually is obstructive jaundice; that the onset of acute appendicitis begins with generalized abdominal pain and secondary right-sided localization; that intestinal obstruction, with the passing of blood in a child under two years of age is intussusception; that right or left-sided segmental pain, descending with the duration points to disease of the urinary tract.

In the main it must be granted that these are major syndromes that invite attention to a particular abdominal condition. For diagnostic

differentiation, abdominal pain is divisible into two main types: (1) the pain that occurs suddenly, is colicky and generalized, with a clear interval and associated with restlessness. This type of pain is due to hyperperistalsis and is met with in spasm or obstruction of any tube that conducts fluids or semi-fluid material. The typical examples, such as biliary colic, ureteral colic, appendicitis, and intestinal obstruction suggest themselves. (2) The pain that requires a given interval of time for its production, that is constant, has no clear interval, has a definite and precise localization and is always associated with immobility or fixation of the patient; the startling and outstanding example of this is acute perforation of the gastroduodenal segment, while the more common examples are perforated appendicitis, hepatic and pelvic abscess. The abdominal conditions that will require diagnosis are, in their order of frequency, gall bladder disease, appendicitis, gastroduodenal ulceration, malignancy of the stomach, colon and rectum, ectopic gestation, twisted ovarian cyst, and pelvic inflammatory disease. The chances of seeing a mesenteric occlusion or a primary liver abscess or regional ileitis, are on the theory of probabilities very slight.

What is the evolution of gastroduodenal ulceration? Is there a symptomatic pattern that is inherent in most ulcers of the stomach or duodenum? The individual with ulcer complains of pain; it is a pain that while gnawing or irritating is tolerated. The striking significance of ulcer pain is that it bears a definite relationship to the time of the ingestion of food, as well as to the quantity and quality of the food ingested. This pain recurs day after day and the symptomatic pattern evoked is uniform from day to day under the same conditions or habits of the patient. These symptoms continue for a variable but lengthy period, running into weeks or months. They are ameliorated or improved by the ingestion of alkalies and throughout the period when the ulcer is symptom-producing the patient still desires to eat. There are certain variables depending upon the location of the ulcer. Duodenal ulcer occurs more frequently in males. The pain that is delayed, occurring two to two and a half hours after eating, appears at about the time the patient begins to think of his next meal. In common parlance it is spoken of as "hunger" pain. In city people where the largest meal is taken in the evening there is a tendency for the pain to occur sometime after retiring—from 11 p.m. to 1 a.m.—and hence the use of the expression "nocturnal" pain.

An ulcer that involves the pylorus in the course of time produces a relative stenosis of the pylorus from edema and inflammatory infiltration and later an organized stenosis from cicatrization. Dilatation of the stomach ensues and the patient vomits material that can be identified readily as food consumed the previous day or earlier. When the muscular contractibility of the hypertrophied stomach fails to move the stomach contents through the pylorus, gastric dilatation ensues with

retention, stagnation, fermentation and the vomiting of putresent material. Absorption from the byproducts of retained gastric contents produces anemia, loss of strength and simulates the cachexia of malignancy. An ulcer located higher up on the stomach has the onset of pain more rapidly after the ingestion of food and as a rule the ulcer is more irritable and the patient vomits partially digested food and undergoes partial starvation, with loss of weight, but without the cachexia. The regularity of symptoms in ulcer is its outstanding feature and regularity is present in at least 88 per cent of all the patients with ulcer of the gastroduodenal segment. A few ulcers at the posterior wall of the duodenum, overlying a portion of the head of the pancreas, may unfortunately for the individual, exist with few declarative symptoms; moreover, this type of ulcer is also difficult to detect by X-ray examinations.

When an ulcer approaches the serosa, the natural protective mechanism of the peritoneum is evoked and local exudation ensues in or about the area of the ulcer with fixation to the neighboring tissues. The pain then becomes constant as the result of localized peritoneal inflammation. In short the ulcer loses its significant pain periodicity.

For all practical diagnostic purposes diseases of the gall bladder may be said to be the result of infection. The causative bacteria are legion and vary in their virulence and their resistance to the bacteriolytic properties of bile and liver secretions. The amount of bile that is secreted in any one day varies between 1,200 and 1,600 c.c. After the ingestion of food there is a rather marked flow of bile in order to take care of the digestive processes. Bile is secreted continuously but is delivered into the duodenum by a series of spurts or ejections and not as a continuous flow. After a meal, therefore, when the liver secretion of bile is more rapid there must be give and take in the pressure of bile within the common duct. This increased secretory pressure is taken up by the ability of the gall bladder to distend within physiological limits and entirely below the threshold of the consciousness of the patient. If the gall bladder is diseased then distention produces symptoms.

The first symptoms of gall bladder disease are a sense of distention or fullness in the right upper quadrant or of gas after meals. The tendency is for the patient to belch gas and obtain relief. There is an almost complete cessation of symptoms after the patient induces vomiting. The patients are predominantly women, are well nourished, and as a rule have excellent appetites. Generally, they are obese and frequently have fibroids and colloid goiter. Into this clinical background there comes, in about 10 per cent of the patients, a new, sudden, and dramatic symptom. Without any premontary signs the patient is seized with an intense pain which seizes her like a stroke of lightning, is associated with restlessness and requires morphine or its derivatives for assuagement. Over a period of time numerous attacks are experienced. Occa-

sionally one attack is a little more severe than the previous one. It is associated with a chill, and a rise in temperature and in a few hours jaudice. The presence of this trinity of symptoms—pain, fever, and jaundice—is significant of common duct involvement. For the safety of the patient it is a matter of the utmost importance that a diagnosis in every case of jaundice should be made promptly. Jaundice calls for surgical intervention or medical procedures. The longer a surgical jaundice is allowed to continue the greater the mortality, the more difficult the surgery, and the more certain the morbidity after recovery.

The classification of jaundice by MacNee is perhaps the most workable. Three types of jaundice may be defined (1) obstructive: (2) toxic or infectious: and (3) hemolytic. It is well to remember that in the industrial world jaundice is arousing more clinical interest and assuming medico-legal significance. The toxic hepatitis with jaundice from the arsenicals is well known, as well as the hepatic degeneration following cincophen. Of increasing importance, however, is liver degeneration occurring in individuals who work in cleansing fluids containing carbon tetrachloride, such as occurs in dry cleaning and in the cleaning of motion picture films.

The differential diagnosis of jaundice embraces a consideration of (1) the history: (2) daily examination of the stools for at least five days: (3) a review of the findings obtained by duodenal examination: (4) physical examination—the presence or absence of Murphy's inspiratory spasm or the palpatory evidence of a distended gall bladder (Courvoisier's gall bladder): (5) X-ray examination: (6) routine blood chemistry with a van der Bergh test, icteric index and possibly cholesterol and cholesterol ester determinations..

In 80 per cent of patients with a malignancy of the head of the pancreas, a pear-shaped tumor may be felt in the right upper quadrant. This tumor, so-called Courvoisier gall bladder, is the basis of Courvoisier's law: "In cases of chronic jaundice due to blocking of the common duct, a contraction of the gall gladder signifies that the obstruction is due to stone: a dilitation of the gall bladder that the obstruction is due to causes other than stone."

Jaundice due to calculous disease or chronic inflammation of the common duct associated with jundice will invariably permit from time to time the escape of bile into the duodenum: therefore bile will be noted in the stools or in duodenal drainage: a chronic jaundice due to malignancy is complete and does not permit the escape of bile into the duodenum. In the jaundice due to intrinsic degeneration of the liver there is no obstruction in the external biliary apparatus and bile is present in the stool and duodenal contents at all times. In jaundice due to splenic disease, such as hemolytic and familial jaundice, there is no interference with the manufacture of bile in the liver nor with its delivery into the intestine. We may therefore summarize the clinical inter-

pretation of jaundice in a synoptic manner as follows: jaundice plus pain, with bile in the stool or duodenal drainage, denotes calculous or infectious obstruction of the external biliary system: jaundice with neither pain nor bile in the stool or duodenal contents indicates carcinoma in the neighborhood of the extenal biliary system: jaundice without pain, with bile in the stools or duodenal contents indicates intrinsic pathology of the liver. Hemolytic jaundice, familial jaundice and the jaundice of the anemias, are all termed "dissociated jaundice" in that there is an excess bilirubin in the blood but no retention of bile salts or bile acids and the excretory function of the liver for the delivery of bile into the intestinal tract is normal. Gallstones, however, may be found at laparotomy in patients with hemolytic jaundice because there is "bile retention" in the intrahepatic bile ducts due to the excess of bile pigments, and to the inability of the liver to excrete this excess.

As a byproduct of long continued gall bladder infection there is a group of individuals that have systematic manifestations of chronic liver-gall bladder infection. Localizing signs of gaseous indigestion or even colic may be in the remote background of their history but their present status is that of a leathery, subicteroidal individual, wrinkled skin, premature senescence, with bad complexion and a general state of semi-marasmus. Another group are individuals who present remote signs of chronic liver-gall bladder disease in the form of cardiac disability and hypertension, rheumatism, chronic arthritis and chronic nephropathies. Ten and five-tenths per cent of gall bladder disease will be associated with ulcer of stomach or duodenum: 16.3 per cent with jaundice: 3.7 per cent with pancreatitis: 13 per cent with fibroids: 1 per cent with diabetes: 2.3 per cent with malignancy and 10 per cent with disease of the common duct.

Carcinoma of the stomach has no pathognomonic symptoms and should always be suspected when an individual complains of gastric symptoms associated with some degree of physical deterioration. An examination of a large number of histories indicates that carcinoma of the stomach occurs in about 60 per cent of the cases in individuals who give a history of long continued gastric distress. This distress is not dissimilar from that of an ordinary ulcer syndrome. A short regimen of ulcer therapy will indicate that one is not dealing with a non-malignant ulcer for the therapy that ordinarily brings about a cessation of symptoms in a gastric ulcer will prove unavailing. A second group of about 30 per cent of the patients will have an initiatory group of symptoms suggesting ulcer but the physical deterioration is out of all proportion to a non-malignant ulcer and the progress of the disease is continuous and fairly rapid. A small group of 10 per cent of patients with cancer of the stomach will have as an initial symptom the vomiting of blood.

The description of acute appendicitis over the years has not been improved upon over the original contributions on the pathology by Fitz

and the clinical interpretation by Murphy. A well individual, without warning, is seized with acute abdominal pain described as an old-fashioned green-apple belly-ache. The pain is generalized, colicky in type, with restlessness and after a variable period of time there is localization of the pain to the right lower quadrant. When localization occurs the pain loses its intermittent character and becomes constant. The patient is responsive to a point of maximum tenderness, has muscle spasm and muscle rigidity, while the blood shows leucocytosis and polynucleosis.

Cancer of the larger bowel is about as frequent as cancer of the stomach. It varies in malignancy with its localization from the cecum to the rectum. Right-sided carcinomata are without obstructive symptoms but have continuous seepage of blood which is seldom macroscopic. They are associated with debility, loss of weight and of outstanding importance an anemia which suggests a grave degree of blood loss, such as is seen in extreme secondary or pernicious anemia. Seventy per cent of the tumors of the colon will be on the left side and of those on the left side 70 per cent will be in the region of the sigmoid. Of the neoplasms of the recto-sigmoid and rectum again 70 per cent will be in the recto-sigmoid. Seventy per cent of all tumors of the large bowel are malignant. The symptoms of neoplasms of the left side of the colon are those that go with a slow and insidious intestinal obstruction and the presence of painful peristalsis. An individual who heretofore has taken a catharctic without cramps, complains that the same catharctic induces cramp. From time to time he will have a stool in which there is gross physical blood. In neoplasms of the recto-sigmoid and rectum two per cent will be within the anal canal and metastasize to the groin: 29 per cent will be in the rectal ampulla and 69 per cent in the recto-sigmoid. All are capable of being diagnosed by the palpatory finger and, or the proctoscope. In no field of abdominal diagnosis is such accuracy of diagnosis possible as in the lower ten to twelve inches of the bowel canal. The outstanding symptoms of rectal cancer are changes in bowel sensitivity. The patient will go to the toilet five or even more times a day for a small explosive evacuation of some slight amount of stool and mucus usually tinged with blood. It requires about six months for a neoplasm of the bowel to extend one-quarter around its circumference. The growth extends more circumferentially than in the longitudinal axis. About 20 per cent of the carcinomas of the recto-sigmoid and rectum give a history of having been operated upon for hemorrhoids. The continuous presence of blood in or on the stools over a period of weeks is more significant of carcinoma than hemorrhoids.

Diverticulitis occurs in the obese male and its acute exacerbations parallel the symptoms of an acute appendicitis except that the pain is localized in the left lower quadrant. Diverticulitis seldom obstructs and sel-

dom bleeds and the treatment is to prevent perforation by judicious rest and dietary restrictions.

In no place in abdominal diagnosis does X-ray examination reach such certitude of diagnosis as in carcinoma of the stomach and without waiting for symptoms declarative or expressive of carcinoma of the stomach, an indigestion of three to four weeks duration should always call for a complete X-ray examination. If a carcinoma of the colon is suspected, barium colon enema should have priority over gastrointestinal series as the latter will occasionally convert a semi-complete intestinal obstruction into a complete obstruction.

It is well to remember that disease of the chest, particularly in young children, and disease of the retroperitoneal organs as well as maladies of the brain and spinal cord may have pain referred to the abdomen and simulate almost any intra-abdominal condition. Ten per cent of the individuals suffering from locomotor ataxia have had an abdominal operation. There is nothing to contravene a tabetic having an acute appendicitis or peptic ulcer, yet the majority of tabetics that have been operated upon have an abdominal operation because the pain was referred to the abdomen. Cursory examination of the pupils, testing of the reflexes and a determination of a Romberg would indicate that a posterior sclerosis was the etiological factor.

Conclusion: In a general way I have attempted to indicate the background of clinical thinking in abdominal diagnosis. The practice of clinical medicine obviously embraces the utilization of all measures, tests and implements in obtaining certitude of diagnosis, yet always associated with clinical medicine is the art of practice, the bringing together of scientific training and incisive, clear cut clinical reasoning.

President Johnson: Gentlemen, I told you this was worth asking for in advance. I may state that Doctor Heyd will have to leave early to get a plane for an engagement in Philadelphia tonight.

Our next paper is by Doctor Peery on "Endoscopy," from the Section on Opthalmology and OtoLaryngology.

I will ask Doctor McKnight to take the Chair.

Doctor McKnight assumed the Chair.

ENDOSCOPY

By Dr. V. P. Peery

Mr. Chairman, Ladies, and Gentlemen: I propose to show you some slides to try to bring out some of the diagnostic and treatment problems involved in an endoscopic department of a small hospital. I would like to make the point that anyone who has two good hands and one good eye—monocular vision is one of the things that has thrown endoscopy into the otolaryngological service of hospitals—and trained in monocu-

lar vision can do endoscopy with proper equipment and a certain amount of training. (Slide.)

This is just to give a background. You will all recognize that. It is the hand of the master, Dr. Chevalier Jackson, who is the father of endoscopy in this country. (Slide.) This represents one of the things that happen when we have a foreign body in the trachea and it is loose. It is a very dangerous foreign body. When the patient coughs that foreign body will go up here to this narrow portion in the larynx, just below the cords and gives an auditory slap and a palpitory thud. I have had children with grains of corn, small children who were repeatedly in emergencies from the fact that the foreign body was moving. It goes up here and jams, and when the patient gets blue enough, the foreign body will be released; if he doesn't relax to release that, and you don't do a tracheotomy, you have a death on your hands. (Slide.)

This over here doesn't come out very well. This shows what happens to a foreign body after it has been there a few hours, particularly an organic substance. The mucous membrane quickly swells around this foreign body and gives you one type. That gives you the mechanics of how to diagnose a non-opaque foreign body. That is an example of a completely checked valve. There is no air going in and no air going out. (Slide.)

These are the other examples of the valves concerned that enable the X-ray man to tell us whether we have a non-opaque body or not. This is the bypass valve. There the foreign body is in the trachea or bronchi. The mucous membrane is not swelling. The air can go in and out.

Quickly, as I was mentioning a few minutes ago, if it begins to swell, the air can go in, because the bronchi expand at inspiration, but at immediate cessation of the inspiratory act the diameter of the bronchi comes down and it traps the air in your lung and you have a checked valve which of course accounts for the emphysema in the lung where the foreign body is.

With that background to explain how we are able to tell whether we have a foreign body in the lung or not, we will proceed.

(Slide.) This is an example of a peanut in the right bronchus—this slide is turned around—of a small child of about a year and a half. Here we have emphysema with the heart and mediastinal contents pushed over to the right. With a history of foreign body aspiration, and this picture, you shouldn't miss it.

(Slide.) This is a series of pictures showing what happened after that happened, in another case. This was a neglected case of an organic substance, another peanut, in the left lung of a child, in which he had already passed to the stage of complete checked valve. He had had emphysema. He had passed through the emphysematous stage but now this lung has become drowned. The contents of the mediastinum and heart were moved to the left; the peanut was removed; result, cure.

(Slide.) The foreign body is out. He is beginning to get air.

(Slide.) The next slide, about three days later, shows more air.

(Slide.) Finally, the last slide shows that lung completely cleared up. I might pause to mention that in supurations of the lung, lung abscess, or whatever the condition is (and a certain percentage of lung abscesses are caused by foreign bodies), it doesn't matter how long standing, those things have a good prognosis. They clear up if the foreign body problem is solved.

(Slide.) This is a picture of a bolt or screw that was in the left lung of an eight-year-old boy. That screw had been in there just a short time, a few hours, and no particular change is shown, just simply a merchanical problem. It was removed.

(Slide.) This tells a long story, and anyone doing endoscopy sees a certain number of these cases. Here is a child that came to his mother and told her he had swallowed a tack playing in the yard. He was apparently all right and she ignored it. She called her doctor and the doctor said, "No, he could not have swallowed a tack because if he had he could not be running about and playing. He certainly could not live with that tack in there."

The story is, though, and the fact is that the child did live with that tack in there two years, and took two general anesthetics in the interim. This child was possibly treated in the same category as the general neurosis, referred to in the paper we heard yesterday. But for the lack of proper diagnostic procedures, which of course costs money, this problem would have been solved sometime before.

However, there was a foreign body in the lung of this child, which had been treated repeatedly for pneumonia, malaria, and pyelitis. Finally after two years he came into the hands of a doctor who was foreign-body-minded. That is the important thing. You must be suspicious of foreign bodies before you are able to make a diagnosis. In two minutes this was removed and (slide) one week later that was the picture of the lung.

That was done some ten years ago and the boy has grown to a normal young man.

(Slide.) This is the same story. This child inhaled a belt lace and he was treated for tuberculosis, and different acute conditions, over a period of about four years. What would happen was this: the foreign body had been in there for a long time and occasionally it would block up and the pressure would get sufficient, and it would blow out by that. After draining he would be able to go to school. He had club fingers, was emaciated, and he looked badly. But about three minutes' work solved that problem and he cleared up.

(Slide.) This just simply represents another case of a foreign body that shows you the emphysema.

(Slide.) This is to show you a small abscess that possibly followed a

tooth extraction. That child was getting in rather bad shape. He had loss of weight, temperature, expectoration, and a bronchoscopy using a Linah tube to reach that—it was accessible to the bronchus—was able to solve this problem.

However, not all lung abscesses or lung suppurations are amenable to bronchoscopic treatment alone. It is a question for the chest man, the choicest surgeon and the bronchoscopist to decide whether they can solve it. A certain percentage can be solved. A certain number of them require the services of a chest surgeon. (Slide.) That is just another case that followed a tonsillectomy.

(Slide.) This is a very frequent mistake. It is a safety pin, represented very poorly, but it shows the diagnostic problem. We take two plates of these cases, of course. One is an exact anterioposterior plate. One is a lateral. This is the safety pin with its greatest diameter in the anterioposterior diameter of it. It can't be any place else except in the larynx. However, that is a frequent mistake owing to the fact that the head is turned to one side. But that safety pin is in the larynx, and it is a very easily solved problem with a properly trained personnel and equipment.

(Slide.) This represents a fifty-cent piece, a flat disk object, which we have to deal with very often, in the esophagus, and that can't be anywhere else except in the esophagus, because its greatest diameter is in the lateral plane of the body. It has to be in the esophagus.

(Slide.) This shows another case of the fifty-cent piece. The greatest diameter is in the lateral plane. It is absolutely diagnostic where it is.

(Slide.) Here is a case of a safety pin that is in the esophagus. Contrary to the other slide you saw, its greatest diameter is in the lateral plane.

There are seventeen different ways of solving a safety pin problem and only seventeen. (Laughter.) An endoscopist will certainly select the way which he has found serves his purposes best. Personally I haven't been successful with some of them at all.

This particular problem was solved by grasping the point of the safety pin, leaving the keeper branch on the outside of tube, and gently coming out with it.

(Slide.) This represents a large washer. It represents a peculiar thing. Why that large washer should come all the way down here and stop at the cardia I don't know, but that is what it did. The plate that was taken before this was done was lost, but this washer was laid on another plate that was taken to show this. (Slide.) This is a very difficult problem because that is a large screw out of a toy automobile, a screw bolt. Any foreign body problem is difficult, for two reasons. It is more difficult if it is in the esophagus. Anyone who can solve foreign bodies in the esophagus can solve them in the lung, with proper equipment. The esophagus will not stand the same trauma that the lung will. And

contrary to popular opinion esophageal instrumentation is much more dangerous than that to the lung except in cases under one year of age. There you have to keep in mind the delicate membranes of the larynx, and the lung in which you will get a certain percentage of surgical swelling.

This problem was difficult in view of the fact that this had a slit, and the X-ray man did not tell us that it had a slit in it. When we went down, anything that we would grab like that with the forceps would slip off, but finally after looking through, we saw this slit in the top of it. That made it simple because we have a form of rotation forceps that we used, and it was gently dangled out.

(Slide.) This shows what will sometimes happen. This was a young person about fifteen years old who swallowed two staples. He wasn't brought in until the next day, and when he was brought in the staples had already passed through. Let me remind you of the fact that any foreign body that passes uninterruptedly into the stomach we never go after. We just watch. If that foreign body is pushed in by any manipulation, we always try to solve it.

(Slide.) Here is another difficult foreign body, difficult for the same reason that the bolt is. You have no good presenting surface. This was, however, solved by grasping this particular portion with rotation forceps and letting that thing dangle out. You don't dare grasp those uneven foreign bodies and hold them rigidly. (Slide.) This represents just another safety pin. I won't pause to mention that. That particular pin was solved by grasping this point and pushing the tube down over it to straighten it within the esophagus.

(Slide.) That is the bolt again.

(Slide.) Here is the simplest of all safety pin problems, an open safety pin with the spring end up. That is just as simple as falling off a log. The tube is simply pushed down here until you expose that. Then grasp that with any sort of forceps, preferably some type of rotation forceps, put that spring in, and pull that out. It shouldn't require three seconds.

(Slide.) This is another difficult problem, a safety pin, and a good-sized safety pin, in the lower end of the esophagus. This was solved by pushing it down into the stomach and rotating it and bringing it up. We don't get all of these safety pins.

We had one baby recently who had a safety pin in thirteen days before we got it out. We watched it and each time we thought we could remove it, it would appear to move, and so we held off. The parents and the doctor were quite upset about it, and the doctor kept saying, "Don't let that pin stay in there any longer," but as I say, I thought each time when I looked at it—and I looked at it every second day—that it was moving, and I held them all off.

If that baby had had a previous operative experience in his abdominal

tract, that would have been a different matter, but that baby was nine months old, and as far as we knew he had a perfectly normal gastro-intestinal tract, and in thirteen days he passed the safety pin.

(Slide.) That represents a safety pin that has gone into the stomach.

(Slide.) Here is a straight pin. They are a little bit hard to handle because in your manipulation you dislodge them and they go on down. A straight pin, ordinarly in ninety-nine and ninety-nine hundredths of the cases will not cause any trouble in the gastrointestinal tract if there has been no disease, no pathology, or no operative procedure to disturb the integrity of the gastrointestinal tract.

(Slide.) This is a very difficult foreign body. This is a jackrock. This case illustrates the point that people sometimes think they have inhaled a foreign body. This child was supposed to have inhaled a peanut, because he was eating peanuts when this accident happened. The father came in with the child in his arms, with two towels into which she was expectorating. The little girl was six years old.

I knew that that child had not aspirated a peanut and I knew it wasn't the peanut that was causing that child to expectorate. I knew there was something in the esophagus and the X-ray told us the story. This is the point in solving the problems. It is that end that has the globules on it, the round knobs. When we go down on this thing, this is the first thing we see, and if we were to grasp that thing and come out, we would most likely kill our patient. We are interested in this point. The trick is to get that point up and to get it to stay up long enough to cup the forceps on there so that the F. B. will move up.

(Slide.) This shows these points here that have no knobs. If you grasp that, it will slip off. So it took just about eighteen minutes of repeatedly manipulating these knobs up and then getting hold of one of those knobs, which allowed it to dangle up.

(Slide.) We are coming to a class of cases of which we have anywhere from three to six on hand all the time, and it requires about an average of two and a half years to solve the problem. Here is a boy who four months previously had swallowed lye, and because after he had swallowed the lye and was able to swallow and eat for several weeks, they minimized the importance of it. They didn't even consider taking him to doctors until months later when he began to have trouble with his swallowing function.

At the time he came to us that is all he could swallow, the bismuth. He had a complete occlusion. This child was dehydrated and was in terrible condition. The first thing we were forced to do was to have a pediatrician give him fluids, and then have the general surgeon do a gastrotomy, because he had a complete obstruction.

Fortunately in this case, after we did the gastrotomy and got the child's fluid balance in good shape, going down with the tubes, we could see this small bottom of the thing, which is just as thin as mucous

membrane, and using a blunt fine forward-grasping forceps, we pushed that down over that a little bit, and it threaded over our forceps. When we did that we took a urethral catheter and it passed down here.

But that is a dangerous procedure. No stricture of the esophagus is dangerous if you get the patient before the interlocking granulations grow up. If you get them and get a string into them, your problem is solved. You should have no mortality. It is a long tedious drawn-out procedure, and at our place we use Tucker Retrograd dilators because we consider that absolutely safe. This was a dangerous proposition because we had complete esophageal obstruction.

So the trick is to get the string in those lye cases before that stricture closes up. You should have no mortality after that, except that which follows the doing of a gastrotomy and closing it later.

This is another case. (Slide.) He came in about five months after his lye swallowing. But that was very easy. This child could swallow clear water.

(Slide.) This shows another lye case, how they hang there. They have little tiny openings that you can't even see sometimes with the esophagoscope, yet if they can swallow tiny bits of water you can get them to swallow the string, but that requires patience. (Applause.)

Dr. McKnight: Gentlemen, the next paper on this morning's program is by Dr. Julian M. Ruffin of Durham, from the Section on the Practice of Medicine: "Amebic Dysentery in North Carolina." (Applause.)

Dr. Julian M. Ruffin then presented his prepared paper entitled, "Amebic Dysentery" in North Carolina." (Applause.)

AMEBIC DYSENTERY IN NORTH CAROLINA

By Julian M. Ruffin, M.D.
Durham, North Carolina

For many years amebic dysentery has been regarded as a tropical or subtropical disease: (1) The recent epidemic in Chicago, (2) tended somewhat to discredit this belief, but so firmly is its tropical nature fixed in the minds of the profession that the disastrous consequences of that outbreak may soon be forgotten, or at least, it will no longer occur to many of us who live in the temperate zone that the cause of our patients' illness may be an amebic infection.

The purpose of this communication is to emphasize the prevalence of the disease; to show how easily the diagnosis can be made; to point out the gratifying results which almost invariably follow adequate treatment; and to warn the profession of the tragedy which frequently overtakes the improperly treated or neglected patient.

Material: This report is based upon a group of 54 patients with proven amebic infection who have been studied in Duke Hospital during

the past six years. The distribution according to race and sex is shown in Table I.

TABLE I

	Male		Female		
	White	Colored	White	Colored	Total
Number	41	5	6	2	54
Percentage	76	10	11	3	100

All ages were affected; the youngest patient in this group being two years, the oldest being sixty-six years of age. The distribution by decades is shown in Table II.

TABLE II

	0-9	10-19	20-29	30-39	40-49	50-59	60-69
Number	3	3	9	14	9	11	5
Percentage	5.5	5.5	17	26	17	20	9

With the exception of one patient whose infection could be traced to the Chicago epidemic, and of three patients who lived in border counties in South Carolina, all the patients in this series were residing in North Carolina at the time of onset of the disease. The duration of the disease could not be accurately determined in some instances, but varied from a few weeks to several years, and many gave a history of one or more relapses.

Diagnosis: The diagnosis was established in 46 of the 54 patients by demonstrating the active, motile forms of endameba histolytica in the stool or in the material obtained by proctoscopic examination. Because of the difficulty of identification and of their doubtful significance, the presence of cysts in the stool was not accepted as sufficient evidence of the disease, though indicating a carrier state. In six patients the diagnosis was made at autopsy, and in two patients with liver abscess, typical ulcers were observed by proctoscopic examination, though no amebæ were demonstrated. However, the prompt subsidence of symtoms following treatment was thought to justify the diagnosis of amebic infection in these two patients.

Stool Examination: Repeated examination of the stools was made in 44 cases. This was positive in only 24 patients (or 55 per cent).

Proctoscopic Examination: Proctoscopic examination was performed in 35 patients. Typical punched out ulcers with normal intervening mucosa were observed in 31 of these patients (88 per cent). In one patient with a liver abscess the mucosa was entirely normal, and in the remaining three patients the proctoscopic picture was suggestive of an extensive non-specific ulcerative colitis, yet amebæ were demonstrated in

smears. Smears obtained by proctoscopic examination were positive in 32 patients (91 per cent).

Barium Enema: X-ray examination of the colon by barium enema was made in 19 cases. In six of these (32 per cent), the colon was reported entirely normal. In the remaining 13 patients, the portions of the colon which were reported as exhibiting evidence of infection are shown in Table III.

TABLE III

	Cecum	Asc.	Trans.	Desc.	Sigmoid	Rectum
Number	5	5	4	9	10	5
Percentage	38	38	31	70	77	38

In no case could the diagnosis of amebic dysentery be definitely established from the X-ray findings alone.

Complications: Six patients in this series had liver or lung abscesses. One liver abscess was drained surgically with complete recovery. Three were treated with emetine, with gradual subsidence of symptoms, and were discharged as cured. In two patients the abscess ruptured into the pleural cavity, and the diagnosis was made at autopsy. Neither of these received specific treatment. One other patient had a pelvic abscess, and another a generalized peritonitis from a perforated colonic ulcer. Both of these patients were moribund on admission and died shortly thereafter.

Treatment: There were 35 patients with frank, uncomplicated amebic dysentery who were treated intensively with carbarsone, yatren, or emetine, or combination of these three drugs, as shown in Table IV.

TABLE IV

	Carbarsone	Yatren	Emetine	Carbarsone and Yatren	Emetine and Yatren
No. of patients	10	8	5	11	1
No. of days before subsidence of diarrhea	3-4	3-4	4-5	2-3	3-4

The doses used were: carbarsone 0.25 Gm. twice daily for ten days orally; yatren 5 Gm. in 250 cc. of water as a retention enema daily for 7-10 days, and emetine hydrochloride 0.1 Gm. subcutaneously daily for 7-10 days.

In a great majority of these patients a marked change in their general well-being was noted twenty-four to forty-eight hours after starting the treatment, and the diarrhea was checked by the third or fourth day. The best results were obtained with the use of carbarsone by mouth in combination with yatren as a retention enema. In 18 patients the appearance of the rectal mucosa was observed by proctoscopic examination

after treatment. Evidence of healing was noted as early as the fifth day, and by the tenth day all traces of the ulcers usually had disappeared. In 5 patients, a mixed infection was present (ulcerative colitis in four cases, and typhoid fever in one). These patients showed very little improvement under treatment. The amebae disappeared from their stools, but the complicating disease was unaffected. Anderson, Delprat, Weeks, and Reed report a similar experience (3).

Relapse (Follow-Up): Information in regard to the condition of the patient since leaving the hospital was obtained in 21 patients. In 6 of these there had been a definite relapse which promptly subsided after another course of treatment. There was no relationship between the relapse and the drug which had been used.

Deaths: There were seven deaths in this series, a mortality of 13 per cent. Six of these patients came to autopsy. Two had liver abscesses which had ruptured into the pleural cavity. One had a general pertonitis from a perforated ulcer. Three had extensive involvement of the colon but had received no treatment, and the patient on whom there was no autopsy had a pelvic abscess.

Discussion: Several points of interest are brought to light by this study. Of greatest importance is the prevalence of the disease in a state whose climate is far from tropical. The disease is endemic and widely scattered over the state. Amebic dysentery is not reportable in North Carolina; consequently this group certainly represents only a fraction of the total number of patients. It is possibly of some significance that very few patients came from the western part of the state which is largely rolling or mountainous country.

The importance of proctoscopic study is shown by the fact that stool examinations were positive in only 55 per cent of the cases, whereas the smears taken from the ulcers were positive in 91 per cent. The appearance of the ulcers seen on proctoscopic examination is so characteristic as to be diagnostic. Occasionally, there is extensive ulceration which is confusing and the examiner must decide between a chronic ulcerative colitis and severe amebic ulceration with secondary infection. In such cases the therapeutic test must be resorted to. It is a fairly safe rule that any diarrhea which fails to respond to adequate specific treatment is not due to amebic dysentery.

While it is generally accepted that the cecum is the site of predilection in amebic infection (4), in this series ulcers could be demonstrated by proctoscopic study in 31 out of 35 patients (88 per cent); and in 5 patients coming to postmortem, ulcers were present not only in the cecum but also in the rectum. In the sixth patient, the rectum and sigmoid were normal, the ulcers being confined to the cecum and ascending colon. X-ray studies likewise confirmed the impression that the descending colon, sigmoid, and rectum were much more frequently involved than formerly had been thought.

Complications are all too frequent and usually serious if not fatal (5, 6, 7, 8, 9). In this series there were 8 patients or 15 per cent, with complications such as liver or lung abscess, or peritonitis from a perforation.

It is of interest to note that in three patients the infection developed shortly after operative procedure, one after an appendectomy, one after a hernia repair, and one after prostratic resection. It is suggested that these patients were carriers, and the operation precipitated the active disease.

Finally, the gratifying results (10, 11) which almost invariably follow adequate treatment should be emphasized. Patients who have been ill for months or years are relieved of their symptoms within two to three days. In this series no deaths occurred in patients who had received adequate treatment.

Conclusions: 1. Amebic dysentery is prevalent in North Carolina. 2. Diagnosis is relatively easy, if proctoscopic examination is employed. 3. Adequate treatment is highly effective.

Bibliography

Cecil, R. L.: Textbook of Medicine, by American Authors, Philadelphia, W. B. Saunders Company, 1937, Fourth Edition, p. 400.

Bundensen, H. N., Tonney, F. O., & Rawlings, I. D.: "The Outbreak of Amebiasis in Chicago During 1933: Sesquence of Events." J.A.M.A. 102: 367, Feb. 3, 1934.

Anderson, H. H., Delprat, Daniel, Weeks, Alanson, & Reed, A. C.: "Amebiasis and Pseudopolyposis of the Colon." J.A.M.A. 107: 2121, Dec. 26, 1936.

Clark, H. C.: "Distribution and Complications of Amebic Lesions Found in 186 Postmortem Examinations." Am. Jour. of Trop. Med. 5: 157, March 1925.

Lynch, K. M.: "Prolonged Influenza and Complications of Intestinal Amebiasis: Clinical Lecture at Cleveland Session." J.A.M.A. 103: 1147, Oct. 13, 1934.

Freund, H. A.: "Amebic Abscess of Liver: Report of Cases Without Previous Manifestations of Amebiasis." J.A.M.A. 102: 1550, May 12, 1934.

Joslyn, H. L.: "Effective Method of Treating Amebic Abscess of the Liver." J.A.M.A. 107: 2117, Dec. 26, 1936.

Sweet, Lewis K.: "Amebic Abscess of the Liver: Report of a Case in a Child Five Years Old." Jour. of Ped. 5: 750, Dec. 1934.

Bassler, Anthony: "Intestinal Obstruction Due to Amebiasis." J.A.M.A. 106: 1965, June 6, 1936.

Reed, A. C.: "The Treatment of Amebiasis: Clinical Lecture at Cleveland Session." J.A.M.A. 103; 1224, Oct. 20, 1934. Correction: *ibid.* 103: 1547, Nov. 17, 1934.

Brown, P. W.: "Results and Dangers in the Treatment of Amebiasis: A Summary of Fifteen Years' Clinical Experience at the Mayo Clinic." J.A.M.A. 105: 1319, Oct. 26, 1935.

Dr. McKnight: Gentleman, the last paper on this morning's program is from the Section on Surgery: "Mortality in Prostatic Surgery, Technic of Prostatic Resection," with motion pictures. Dr. Thompson! (Applause.)

Dr. Raymond Thompson: Gentleman, I am going to read part of this paper, and the technic of the operation will be shown by a motion picture.

Dr. Thompson then presented his prepared paper, illustrating with motion pictures. (Applause.)

MORTALITY IN PROSTATIC SURGERY TECHNIQUE OF PROSTATIC RESECTION BY THE DAVIS METHOD — MOTION PICTURES — ANALYSIS OF 108 CASES

Raymond Thompson, M.D., Charlotte, N. C.

In presenting this paper I wish to report rather fully from an article by Drs. Harry C. Rolnich and Lester A. Riskind, of Chicago, published in the issue of the *Journal of Urology* for January 1937. These gentlemen report from the records of urological patients in the Cook County Hospital for a five-year period, and on private patients operated upon by them in other hospitals. In a series of 897 cases at the Cook County Hospital the following operations were performed:

(1) Cystotomy, (2) Cystotomy and suprapubic prostatectomy, (3) Perineal prostatectomy, (4) Cystotomy and resection, (5) Transurethral resection.

Also reported are records of 126 patients operated upon by Drs. Rolnich and Riskind in other hospitals. In each of the 126 cases a preliminary cystotomy was done, this followed by prostatectomy *or* resection.

Cystotomy was done on 598 patients at the Cook County Hospital; of these 427 (71.4 per cent) lived and 171 (28.6 per cent) died. This mortality rate of 28.6 per cent will impress anyone as very high, especially since the operation is in most instances considered a minor procedure. Preliminary cystotomy is done to establish better drainage of the bladder and as a step in improving kidney function and getting the patient in best possible general condition for operation. However, if, in order to reach this so-called safe stage, almost one-third of the patients are to die after the preliminary procedure, there rises the important question, Is this plan of treatment justified?

A report on the 126 patients operated on by these surgeons in other hospitals, each of whom had a cystotomy, shows that only six patients died following cystotomy. How can this low mortality from a certain

operation done on patients of a private clinic be reconciled with the high mortality in the County Hospital group? A number of reasons appear to explain the high mortality on the urological service of a large municipal general hospital. Many of the patients are among the poorest surgical risks. Many who died following cystotomy would not have been operated upon in most clinics. They would have been treated by catheter drainage. A considerable number came to the hospital only after many days of retention or with severely infected bladders. They also included all cases in which a cystotomy was done.

There were 15 patients with bladder stone of whom six died, 56 with bladder tumor of whom 25 died; of 45 who had permanent cystotomy for the relief of obstruction in carcinoma of the prostate gland 13 died; of 13 requiring cystotomy for the control of hemorrhage, or because of infection or retention of urine, within a few days following resection, eight died.

Second-stage Suprapubic Prostatectomy

Of 235 Cook County Hospital patients, 51 died—a mortality of 21.7 per cent.

Perineal Prostatectomy

Of 117 patients given this operation 20 died, eight of the 20 deaths following radical perineal prostatectomy for carcinoma.

Prostatic Resection

The records of 1933, 1934 and 1935 were reviewed. Of 283 patients who had the operation in this three-year period, 51 died—a mortality of 18.5 per cent. In a group of 60 patients operated on by Rolnich and Riskind in other hospitals the mortality following resection with a closed bladder was 12 per cent.

Incidence of Carcinoma of the Prostate Gland

Of 794 patients with symptoms of prostatic disease, studied clinically and pathologically, 600 were benign and 194 (24.3 per cent) malignant. Of the 194 cases of carcinoma, 162 were diagnosed clinically. The 27 (13.9 per cent) which were proven later to be carcinoma had been diagnosed clinically as benign hypertrophy. The high incidence of occult carcinoma of the prostate gland should cause us to investigate carefully any suspicious infiltration, induration or nodule. It should be needless to state that all specimens should be sent to the laboratory.

At the meeting of the Southeastern Branch of the American Urological Association held at Birmingham last November, Dr. Gershom Thompson gave 84.7 per cent transurethral resection and 15.3 per cent suprapubic prostatectomy as the methods of removal at The Mayo Clinic, and in a recent series 100 consecutive cases, all that were observed in that period who required surgical treatment, the transurethral opera-

tion was chosen in each case. But, he went on to say that resection should be performed only on patients who suffer very definite symptoms of obstruction and that the procedure should not be applied in cases in which inflammatory conditions are largely responsible for the disability, that patients suffering from such conditions should be treated by non-surgical methods. For the period 1931 to 1936 Gershom Thompson reports having personally performed 1800 prostatic resections with 12 deaths, a mortality of less than one per cent. It is only fair to point out that there is no follow-up report. He concludes by saying that relief of symptoms is just as certain and complete after transurethral resection as after any other type of prostatectomy. You will note that he calls resection a form of prostatectomy, and rightly so for it is a cutting out of the prostate, not a mere tunnelling or guttering of the gland.

Herman's *Practice of Urology,* just off the press, says that in early cases transurethral operations have largely replaced non-operative procedures, that modern resectoscopes permit removal of large amounts of tissue and that there is no question of the relative safety and immediate effectiveness of resection, not only of minor lesions but also of certain enucleable tumors. It is gratifying to have support for this method from so conservative a school as that of the University of Pennsylvania.

Dr. T. M. Davis who was a member of the surgical staff of our clinic for six years, and until the state of his health caused him to retire, reported in *The Southern Medical Journal,* for August 1935, 748 patients operated on by prostatic resection with six deaths, a mortality of 0.8 per cent.

Since the illness of Dr. Davis in March 1937, we have operated 110 times on 108 patients with two deaths—a mortality rate of less than 2 per cent. Alcock reported 1400 resections mortality of 2.1 per cent. Gershom Thompson reported 1800 operations with 12 deaths, a mortality of less than 1 per cent.

Analysis of 110 Operations on 108 Patients

Age	No. of Patients	Age	No. of Patients
40 - 50	4	75 - 80	10
50 - 55	2	80 - 85	4
55 - 60	24	85 - 90(88)	1
60 - 65	15		
65 - 70	24	Total - - - -	108
70 - 75	24		

Preoperative Treatment, or Preparation

The number of cases in which it was necessary to have bladder drainage 48. Number of cases of complete retention of urine 21. In cases of complete retention or a large amount of residual urine, we instituted bladder drainage by Keyes' decompression catheter method. In 60

cases residual urine was less than 10 ounces and these were not given bladder drainage. The well established plan of preliminary treatment should be continued until the renal function has become stabilized as determined by renal function and blood chemistry tests. Every effort should be made to have the patient in as good physical condition as possible before operation.

Postoperative Care

The most important measure is thorough drainage of the bladder through a catheter. Hemostatic bags serve an important purpose in controlling bleeding, however we do not employ them routinely. The bladder should be irrigated at frequent intervals if necessary to remove small blood clots or to ensure constant drainage.

Postoperative Complications

Hemorrhage: In this series we had only three cases of severe bleeding in one case two weeks, in one two-and-a-half weeks, and in the third three weeks after operation. In all cases bleeding was controlled by inserting the catheter.

Epididymitis: In this series of cases occurred postoperatively in six cases. The intervals between operation and epididymitis were eight days, three weeks, four weeks, four-and-a-half weeks, five weeks, and six weeks respectively.

In only one case was the epididymitis so sever that it did not clear up in a week to ten days by ordinary treatment.

Vasectomy was not performed in this series.

Diverticulum: found in three cases, caused no trouble in any case after the prostate gland was removed.

Vesical calculi: four cases. Stones were all removed before prostatic resection was done.

Reoperation: In this series it was necessary to operate the second time in two cases—in one 10 days, in the other 14 days, after first operation.

In one case tissue weighing 24½ grams was removed by first operation, 13½ grams by second operation; in the other case three grams was removed at the first operation and four grams at the second operation. In both cases voiding was without difficulty and the bladder was well emptied.

Incidence of Malignancy: 16 cases carcinoma of prostate gland, in two carcinoma of prostate and bladder.

Time in Hospital: Many patients could leave the hospital in one week to ten days, but as the 10th to 12th day is the time when bleeding is most likely to occur, we advise all patients to remain in the hospital for two weeks. Many patients promise to be quiet at home, but they usually do not. Rarely is it necessary to remain in the hospital more than two weeks.

Mortality: In this series we had two deaths.

First case, patient aged 77, had bladder drainage 16 days. Two bladder stones and 12 grams of prostatic tissue were removed. Blood pressure, renal function tests, and chemical constituents of the blood were within normal limits. Death came four days after operation, from nephritis and myocarditis.

Second case, patient aged 76, had bladder drainage 10 days. His general condition fairly good, renal function and blood constituents within normal limits. Amount of prostatic tissue removed 4 grams. He died 45 minutes after operation of a cardiac accident.

Deaths Reported to us After Leaving Hospital—Five

1. Died four months after leaving hospital, aged 69, of cerebral hemorrhage.
2. Six months after leaving hospital, aged 68, of pulmonary hemorrhage. This patient had taken treatment in tuberculosis sanatorium for one year before operation.
3. Seven months after leaving hospital, aged 71, cause of death not known.
4. Seven months after leaving hospital, aged 85, of myocarditis.
5. One year after operation, aged 58, of carcinomatosis. The operative diagnosis was carcinoma of prostate and bladder.

Conclusions

1. We are impressed with the high mortality reported in prostatic surgery.
2. Careful pre- and post-operative attention is a large factor in yielding a low mortality.
3. We are operating in a much larger number of cases without preliminary bladder drainage now than in the past. In cases which need pre-operative bladder drainage the simple decompression method by catheter drainage first suggested by Dr. Keyes of New York is much preferable to cystotomy.
4. In all cases of carcinoma of the prostate gland transurethral resection is the operation of choice.
5. Some very large adenomatous prostates should be removed by an open operation.
6. Thorough resection of prostatic tissue should be done. In 40 to 50 per cent of the cases 20 to 25 grams of tissue should be removed.
7. Transurethral resection of the prostate gland has been the greatest factor in lowering the mortality in prostatic surgery and is the operation of choice in the great majority of cases.

Technique—Davis' Method

In the meeting of the American Urological Association held at Memphis, in 1931, our associate, Dr. Theodore M. Davis, stated that

to insure permanent results by Prostatic Resection, at least two-thirds of the obstructing lateral lobes and the entire median lobe must be removed. In 1936, before the Southeastern Branch Society of the A.U.A., he stated that to insure the best results the entire median lobe must be removed and the laterals down to the so-called capsule. The only glandular tissue to be left is that below and just posterior to the verumontanum which envelopes the ejaculatory ducts. Dr. Davis' technique developed during nine years and in doing more than 1,000 resections is as follows.

The required examinations and preliminary treatment and suitable condition for operation are presupposed, and that every patient is in the best possible condition. It is imperative that the renal function be stabilized before any operative procedure is performed. Stricture of the urethra should be gradually dilated with sounds, preferably a week prior to the operation. In cases with stricture that require decompression, the small retained catheter will adequately dilate the stricture within a week's time.

Before anyone attempts to perform a resection, in justice to his patient and himself, he should be adequately equipped and ready to cope with any situation that may arise.

A minimum of apparatus is: at least three Stern-McCarthy working elements, with proper telescopes for each; one size-24F. resectoscope completely for use in small urethra or stricture of small caliber; two regular sheaths; Timberlake obturator and sound; one right-angle and retrograde telescope, one hemostatic forcepts, two Ellik evacuators and suitable catheters.

It is our belief that a majority now agree that the sparkgap generator is superior to the tube machines and that a damped current is essential for the control of hemorrhage. The Improved Davis-Bovie Generator supplies a variable cutting current, which with proper setting will section tissue with a minimum of hemorrhage. For Fibrous lateral lobes a setting of 1 or 2 on the dehydrating dial and of 60 to 70 on the output dial, with a loop of 15,000th size, sections as readily as any previous current with a minimum of bleeding. Very vascular hypertrophies require a setting of 4 and 100, moderately vascular hypertrophies a setting of 3 to 90. It is possible with experience to so adapt the current to the type of gland as to reduce the bleeding to insignificance. If a setting of 4 to 100 is employed in the vascular gland we change the setting to 3 and 80 in removing the deeper tissue to prevent leaving tissue that is deeply coagulated.

For the control of hemorrhage the unit described delivers a highly damped coagulating current that is ideal. In a few seconds it seals the largest vessels encountered in resection. During the application of the current the loop should be in constant motion to prevent coagulation to any depth.

The operating table should be wide enough to afford arm rests, be easily elevated or lowered and have suitable leg holders, and be provided

with a drainage pan of adequate length. A comfortable position for the patient and accessibility for the operator are essential.

Provision must be made for an adequate supply of water for irrigating. For over five years we have been using tap water with the very best of results. In some localities distilled water may have to be used as the chemical contents of hard water may interfere with the proper action of the electric current. The irrigating medium should be used through the sheath inlet at all times when the current is imposed upon the loop to prevent over-heating of the sheath with damage to the urethral mucosa and subsequent stricture formation.

In our clinic preference is for caudal and transsacral block, an anesthetic in our experience, free from immediate danger and remote sequelae.

The patient, having received the anesthetic, is placed in proper position on the table with an 8x10 inch tinfoil electrode under the buttocks and properly draped. A 30F. Timberlake sound is introduced into the bladder. If the meatus is small, meatotomy is done to permit of free mobility of the sheath. For the average urethra the sound is replaced by a regular resectoscope sheath thoroughly lubricated. A small unrethra or a stricture will require a size-24F. resectoscope. An aid in the introduction is the Timberlake obturator which has a flexible beak and readily rides over most median obstructions; in rare cases it may be necessary to introduce a size-10F. soft-rubber catheter and thread the catheter within the regular obturator supplied with the resectoscope.

The sheath within the bladder, obturator removed, the bladder irrigated until the water returns relatively clear, the right-angle-vision telescope is inserted within the sheath and detailed inspection is made of the mucosa, the ureteral orfices (if not obscured by a large median obstruction), their relation to the posterior protrusion, the relation of the intereretеric ridge to the posterior obstruction, the presence of diverticula, tumors or stones; the vesical orfice, the type, size and position of the obstruction. As the telescope is slowly withdrawn the lateral lobes are inspected, the verumontanum located and its relation to the apex of the lateral lobes determined. The length of the lateral lobes is determined by the distance from the apex of the gland to the posterior border of the intravesical protrusion.

The right-angle-vision telescope is replaced with the retrograde telescope and inspection of the vesical orifice with the intravesical protrusion of the prostate is made retrograde. This telescope is replaced with the working parts of the resectoscope, urethral bladder and ureteral orifices looked for, their relation to the posterior protrusion ascertained, the resectoscope is slowly withdrawn into the prostatic urethra, the lateral lobes, their length and their relation at the apex to the verumontanum and external sphincter is noted. Only after accurate orientation is sectioning of tissue started.

In simple median bar, there is a definite elevation of the floor of the

vesical orifice with a depression between the bar and the crista galli. The ureteral orifices may be very close to the base of the bar or more distal along the trigone. In removing the bar sufficient water should be in the bladder to prevent damage to the bladder wall, the loop is placed under vision upon the bladder aspect of the bar at 5 or 7 o'clock, care being exercised not to place the loop too near the ureteral orifices. With water flowing through the sheath, the cutting current is imposed upon the loop and, with a short excursion (not the full length) of the loop towards the operator, a section through the bar is made. It will be noted that the vesical orifice widens by retraction of the tissues after the first section. Repeated sections are then made in the bar from the starting side to the opposite side at 5 or 7 o'clock. It may be necessary to section only one depth of cut to remove small bars; in the larger cutting to two or more "depths" are required to leave the floor of the vesical orifice on a level with the prostatic urethra and the trigone. It is our custom to limit our sections to within one centimeter of the ureteral orifices. There always appears to be obstructing tissue in the midline posterior to the sectioned edge as observed with the fore-oblique lens; our method limits sectioning posteriorly to slightly anterior to the ureteral orifices when they are close to the posterior base of the bar and we prefer to look through the right-angle-vision telescope rather than to section too far along the trigone. Occasionally the interureteric ridge is hypertropied with a bar found behind the ridge. From sections through Mercier's bar we have never had any untoward result. Care should be exercised when sectioning the interureteric ridge not to go too deeply or widely. Retraction of the muscle widens a shallow cut and deep sectioning may perforate the bladder. As the bladder should never be distended during or after the sections have been made in Mercier's bar, we prefer to defer this part of the operation until the resectoscope is to be replaced with a retention catheter. After removal of bar obstructions the overhanging edges of the lateral lobes on each side at the upper part of the sectioned area should be removed until there is no obstructing tissue protruding within the vesical orifice. All large bleeding vessels are coagulated as sectioned by imposing the coagulating current upon the loop which is kept in *constant* short backward and forward movement over the vessel area.

With an Ellik evacuator the sections of tissue are removed from the bladder. Care should be taken to exclude all air from the evacuator before use, air mixed with the gases liberated during the operation forms an explosive mixture, an application of the electric current with the loop above the water level within the bladder may cause an explosion with rupture of the bladder. After all fragments have been removed and all bleeding points coagulated, a number-20F. catheter is passed through the sheath which is removed and the catheter fastened *in situ* with adhesive tape; the water will return clear if hemorrhage has been controlled.

In contracture of the vesical orifice, a dense fibrous collar surrounds the orifice which is usually tight around the sheath. This collar should be removed by the procedure described for the floor of the orifice and continuing the sectioning around the orifice.

The blood supply of the median lobe enters laterally on each side beneath the floor of the sulci, the vessels sending ramifications posteriorly which pass over the lobe beneath the mucosa, as was beautifully demonstrated by Flocks, of Alcock's clinic. After visual inspection, as outlined before, the size and position of the median lobe determined, in lobes with deep sulci two consecutive sections are made in the floor of the sulcus of the lift side. This step severs the arterial supply to this side of the median lobe. The bleeding vessels are coagulated and the same procedure repeated in the right sulcus. Then the median lobe may be resected practically free from hemorrhage.

Median lobes that do not have deep sulci but tend to merge with the laterals require repeated sectioning until the depth of the groove is down to the bladder muscles, to insure that the arterial supply has been severed. The depth of the groove is determined by the trigone and the muscle fibers readily visible in the floor of the groove or urethra.

After the blood supply of the median lobe has been controlled, sectioning is begun on the right top vesical aspect of the lobe. Working towards the urethra repeated sections are made across the lobe to the opposite side, reversing the procedure across to the left and repeating as many times as necessary until the entire median lobe has been removed. The thin posterior edge should be removed by hooking the edge with the loop, drawing it forward away from the trigone before applying the cutting current. Care must be taken not to section too deep or too far toward the trigone. When the tissue of the median lobe has been adequately removed the floor will be formed by muscle tissue. Unless one is especially skilled with the fore-oblique lens it is best to observe with the right-angle-vision telescope rather than to remove more tissue than is necessary in the posterior border of the floor of the vesical outlet.

If lateral and median lobes are large we prefer to remove the median first; in cases of large lateral lobe hypertrophy and small median obstruction it is best to remove the laterals first on account of the hemorrhage from the lateral lobe mucosa by trauma incident to the removal of the median obstruction.

In cases of small-lateral-lobe obstruction we usually begin our sections in the right lobe, the initial section at 11 o'clock, starting at the vesical aspect of the protrusion. Additional sections are made circumferentially in the intravesical protrusion of the lobe. Sectioning is continued one or more cuts in depth until the muscle fibers of the so-called capsule are observed. The many arteries cut during the procedure are coagulated as cut, all bleeding being controlled before making linear sections in the lateral lobe toward the verumontanum. (As Flocks has beautifully demonstrated, a majority of the vessels enter the lateral lobes from

beneath the bladder mucosa, extend posteriorly over the intravesical protrusion and then pass below the mucosa along the urethra.) Sectioning of the intravesical protrusion down to the bladder muscle circumferentially severs a majority of the arterial supply to that lobe. The remainder of the lateral lobe can now be resected with less hemorrhage than if the sections were made at random, *that little* at the apex of the gland where 10 per cent of the blood supply enters.

After sectioning in such a way as to control hemorrhage the lateral lobe is removed by linear sectioning to form a groove along the top of the gland, down to the muscle fibers of the capsule, the groove extending from the verumontanum level to the vesical neck. The tissue below the groove is repeatedly sectioned until the entire lobe has been removed down to the muscle fibers of the capsule. We limit our sections at the apex to just posterior to the verumontanum level when sectioning towards the operator and remove the tissue at the apex of the lobe by carefully placing the loop under vision upon the tissue to be removed and sectioning towards the bladder; this procedure delineates accurately the removal of tissue near the external sphincter and if properly executed incontinence will always be avoided.

Hemorrhage at the apex is controlled, confining the coagulation to the anterior cut edge or towards the bladder; the bleeding anterior to the sectioned edge that occurs in the mucosa from trauma is never coagulated and will stop of itself after the catheter is *in situ.*

The left lateral lobe is removed in a similar manner, hemorrhage arrested and inspection of the vesical orifice is made with a rightangle-vision telescope. The vesical orifice should reveal in the posterior cut edge of the prostatic fossa muscle fibers with an absence of prostatic tissue, the bladder wall sloping away from the muscular edge of the orifice towards the urethra. The operative site when observed with the fore-oblique lens will have a narrowing at the level of the verumontanum and widen concavely in the prostatic portion with a circular narrowing of the vesical orifice.

The position, size and variable contour of the carcinomatous prostate lobes are such that it is impossible to describe any technique that will apply to all cases. During the inspection it will be noted that the tissue is unyielding and, in cases of large cancers, that it is often difficult to make a satisfactory examination of the entire bladder.

In resecting these glands the procedure is usually the same as for the lateral lobes; however, sectioning is not always carried down to the capsular muscle. The tissue does not bulge into the sectioned area as does the benign tissue, the cut surface of malignant prostate appears granular, or cauliflower-like. With experience one may detect a malignant area where it was not suspected. The best that can be accomplished is to remove all the cancer tissue possible and leave as large a channel as possible.

Until several years ago it was our custom to coagulate the entire

raw area after the removal of the tissue. We believe this was an error, that it only delayed healing. Our present practice is to section with a cutting current with the minimum coagulating qualities and limit coagulation to the bleeding vessels. Our results are better as demonstrated by greater comfort after operation.

President Johnson then resumed the Chair.

President Johnson: Gentlemen, the next thing on the program is the election of State Board of Medical Examiners.

Before we go into that, the retiring Board has asked to make a statement, and have appointed Dr. Ben Royal to make the statement for them.

Dr. Ben F. Royal (Morehead City): The outgoing Board wishes to take this last opportunity of thanking the North Carolina Medical Society for the honor conferred on it six years ago, when it elected it to membership on this Board.

During that time, this Board has learned something from experience that we feel we should have had handed down to us in a different way. I realize that what I am about to say to you can accomplish but little right now. I am merely trying to plant an idea that I hope will grow.

It has been customary in times past, and will be continued this year, for the outgoing Board to invite the incoming Board to sit with it at its June session in Raleigh. During that session the outgoing Board can impart something that it has learned in six years to the incoming Board.

At the very first Board meeting, however, that you have, questions will arise that will not have been covered by this June meeting, and you are going to have to learn what to do about that, purely from experience.

You should not have to learn these facts by trial and error. It is the mature experience of this Board, and it is our firm belief, that the Medical Society's interests would be better served if instead of electing seven men, as you must do today according to your basic law, for a term of six years and then at the end of the sixth year letting that Board go in its entirety and electing seven more men (you lose the experience that these men have gained, and the only way you can get it back again is to go over identical by the same route and learn it in the same way that the outgoing Board have learned their experience), you elected them for varying terms.

It is our contention that this Board should be a staggered board, that two men should be elected each two years. (Applause.)

We realize that you can't do that today. Under the law as it now exists you have to elect seven men for a term of six years. But there are ways that this idea can be worked out satisfactorily.

This Board has thought about it quite a bit during the six-year period. We doubted at first the advisability of mentioning it at all. Then on the other hand we realized that we are the creative thing

and that you are the creator and entitled to the experience that we have gained. We could conceive of no better source from which this information could come to you than from an outgoing Board who could not possibly have an axe to grind. We think you should know that.

We have thought of a number of ways in which this desirable thing could be accomplished. Perhaps the two men receiving the lowest vote today, if they could go off in two years, the two gentlemen receiving the next highest vote go off in four years, and the remaining three serve six years, that would be one way to get it.

But that is a matter the details of which must be worked out by the incoming Board. What this Board wants to do now is to plant the idea with the newly elected Board, so that when they do meet they in their inner cloister can work out ways and means of bringing about this consummation so devoutly to be wished, we think.

With that idea planted, if you gentlemen will bear that in mind as you do your voting and see if some way cannot be worked out to bring about this thing, we think that it is altogether feasible and that it is a mistake to lose the experience that is gained each six years. We commend it to you and heartily recommend it. (Applause.)

President Johnson: Gentlemen, you have heard Dr. Royal's remarks. They call for no action at this time, but they certainly deserve serious consideration.

We now call for nominations. I want to ask the unanimous consent of the body to limit the nominating speeches to three minutes and the seconding speeches to one minute, unless there is some objection, because there are a number of candidates to nominate, and the element of time enters into it.

Is there any objection to that?

Members: No objection. (Laughter.)

President Johnson: Nominations are in order for Members of the Board of Medical Examiners. I will ask Dr. John Q. Myers to write the names on the board as they are nominated and as I understand the rules, it is an elimination contest. All seven have to have a majority of votes cast.

Dr. S. R. Thompson (Charlotte): Mr. Chairman, I would like to place in nomination a man who is well qualified. I don't have to speak even three minutes. Dr. Crowell wished very much to be here to make this speech, but on account of illness was unable to come. I nominate Dr. Northington of Charlotte. (Applause.)

Dr. C. R. Hesprey (Lexington): Mr. President, Members of this North Carolina Medical Society: I want to place before this most important convention of the North Carolina Medical Society the name of a man who needs no introduction. When I mention his name you will know him because of the fine service that he has rendered the medical

profession in the state of North Carolina, and the North Carolina Medical Society. Knowing him to be eminently fitted for this most important position, I take great pleasure in presenting the name of my townsman, Dr. J. R. Terry of Lexington. (Applause.)

Dr. John H. Tucker (Charlotte): Can I tell a little joke that won't come off my minute? The reason I said I am glad to introduce myself as Tucker is this: I went out to a community church in Charlotte the other day, and after a rather elaborate musical entertainment the presiding officer of the occasion made the announcement that I was the speaker of the evening. He said, "Now, ladies and gentlemen, all the entertainment for the evening is over. We will ask someone to introduce the speaker of the evening." (Laughter.)

The speaker didn't even get my name.

But I do rise, as it seems to me these nominations have been so brief, to second a man that I am very much interested in. I feel that few people recognize the importance of Dr. Northington in the state of North Carolina. He has long been interested in medical education. One of his most important requisites is that he is able to correct reports and put them in proper English for his journal. He has the qualities of a medical examiner. He is inquisitive, he is very critical at times, but age has tempered him somewhat, now that he is the father of three children. I would like to read—I think I have a half minute left—a communication which fell into my hands by accident this morning.

Am I overstepping my bounds of time?

President Johnson: Your time is just about up.

Dr. Tucker: Well, I won't read it.

Dr. Paul P. McCain (Sanatorium): Mr. President, Fellow Members: I wish to nominate a man whose twenty years in the practice of medicine has been a record of twenty years of service for organized medicine in his county and state societies. He is a man whom all of you know. He is a man who has a tremendous private practice, but he has never been so busy that he wasn't willing at considerable sacrifice to meet every appointment that he was supposed to meet for committees and other meetings for the sake of his society.

Furthermore, he is a man whose character and whose professional attainments have been such as to be an inspiration to the men whom he will examine—a good fellow, Bill Coppridge of Durham. (Applause.)

Dr. R. C. Mitchell (Mt. Airy): Mr. President, the Medical Society of the State of North Carolina: This nomination is very simple and to the point. I represent the Eighth District. We have met and were actuated by a strong desire for representation on the Board of Medical Examiners. We are concentrating and agreed upon nominating Dr. Frank Sharpe of Greensboro. (Applause.)

Dr. I. H. Manning (Chapel Hill): I regard the election of members to the Board of Medical Examiners as the most serious responsibility that this Society has. The state has said in effect: Build up your own standards and enforce them.

I believe that the Board of Medical Examiners should have on it some recent graduate who has been in touch in the last ten years with what is going on in the medical schools. They are constantly changing. New knowledge is coming up. And this young man should know what could be expected of a recent graduate. Therefore, it is my privilege and pleasure to nominate Dr. L. A. Crowell, Jr., of Lincolnton.

Dr. Crowell, as you know, belongs to a family of distinguished physicians in North Carolina who have served this state in many capacities, but he has built up an independent reputation of his own by his conscientious, careful, and skilful work. It gives me great pleasure to recommend Dr. Crowell because he is a recent graduate. He is a man of great character and determination, and he knows something about what has gone on in the schools in the last ten years. (Applause.)

Dr. William deB. MacNider (Chapel Hill): Mr. President and Members of the State Medical Society: I think I have had an unusual experience in watching the development of a young man in his academic work through his medical education, as my research assistant, seeing him graduate and relate himself to organized medicine and to step out in terms of his specialty and become one of the leading urologists in the South.

It is a pleasure to me to second the nomination of Dr. William Coppridge. (Applause.)

Dr. W. Houston Moore (Wilmington): Gentlemen, I rise to nominate a man from the Third District who has the endorsement of the members of the Third District Medical Society of North Carolina. He has done much for the Medical Society of North Carolina. He always attends meetings. He has written a number of papers. He has entered into discussions of the papers of his sections always. He is a man who enjoys a large practice and is unusually well equipped by education, by training, by character, by temperament, and by disposition, to fill this honorable position.

I present the name of Dr. J. S. Brewer of Roseboro, North Carolina. (Applause.)

Dr. C. W. Armstrong (Salisbury): Mr. President, Gentlemen of the Society: On behalf of the Rowan County Medical Society, I desire to present for your consideration our candidate for a position on the Board of Medical Examiners. I would like to remind you that not since 1914 has a man from Rowan County sought or held an appointive or elective position in the State Medical Society.

The man whom I am about to present to you has practiced for twenty years in the city of Salisbury. He is a Fellow of the American College

of Surgeons. He has had eight years of general practice and sixteen years of general surgical practice. There are so many things that might be said of Dr. Harold Newman that I hardly know what to utilize in this very short time available for me. Suffice it to say that Dr. Newman is the unanimous choice of our Society, that we sought him for the position and asked him to run. His twenty-four years of practice make him mature enough to be of sound judgment, and not too old to have kept up with modern trends.

On behalf of the Rowan County Medical Society I present with a great deal of pride and pleasure Dr. Harold H. Newman of Salisbury. (Applause.)

Dr. H. W. McKay: It gives me great pleasure to second the nomination of Dr. Street Brewer. In my opinion he has all the basic qualifications for this high office.

Dr. Charles F. Strosnider (Goldsboro): Mr. President and Fellow Members: It gives me great pleasure to present the name of a man from the Second District who has been unanimously endorsed by the membership of that district. This man is a graduate of one of the leading medical centers of this country, the Jefferson Medical College of Philadelphia, a graduate of 1914, two years hospital work, since which time he has been doing a very active general practice work. He is a general practitioner in the city of Greenville, Pitt County, a man who has been very active in medicine, organized medicine. He is organized medicine day in and day out. He has been a member of your Executive Board for a period of six years and he knows the workings and the desires of this organization.

He also knows what the general practioner needs to know (the man who is going to practice medicine), in order that he may serve our people best—and Lord knows, we need good practitioners on our Board. We need specialists, but this is a man who knows the needs, and he will temper justice with mercy.

It gives me great pleasure to present the name of Dr. Karl Pace of Greenville. (Applause.)

Dr. H. L. Griffin (Asheboro): I wish to present the name of a man who is very loyal to the Medical Society. He has served as Councilor, and he has served as president of his district society, and Chairman of the Practice of Medicine Section, a Moore County Medical winner. He served in the World War.

I want to nominate Dr. A. B. Holmes of Fairmont.

Dr. J. B. Wright (Raleigh): Mr. President, Gentlemen of the North Carolina Medical Society: I want to present a general practitioner from the Fourth District, the northeastern section of the state, a man who is a graduate of Trinity College, who took his medical degree in Richmond, Medical College of Virginia, who served his internship in the

Medical College under the tutorship of the Johnson Willis Group, who served his country for the entire period of the World War and came back and located in Weldon. He has practiced medicine there as a general practitioner, active always in organized medicine, a man with a background and an experience that would qualify him as a good substantial man to look over and pass on the young men who should practice in North Carolina—Dr. W. G. Suiter of Weldon. (Applause.)

Dr. John W. MacConnell (Davidson): This is the finest audience we have had through the entire meeting, and, really, of the men on the list there, I couldn't conscientiously vote against any of them. Unfortunately, I can vote for only seven. It shows that the men who are nominated are high class men. It shows that we really need this interest in the Board of Medical Examiners. Don't think for a minute that it isn't an important post, because it is. You want to see that unqualified men do not get on the Board. You want to see that men who bring disgrace on the profession are eliminated as quietly as possible. I think you will all agree with me on that.

I am a believer in geographical distribution of these Examiners for certain strategic reasons. Part of the Examiners should come from the east, part from the west, southcentral, central, and so forth, and you can do that very easily with seven men.

I am going to second the nomination of a man who has all the qualifications that Dr. Wright has mentioned, who is worthy and well recommended, and so accepted and taken among the profession and among all his fellow practitioners. I am seconding the nomination of Dr. Suiter. (Applause.)

Dr. Jas. W. Vernon (Morganton): Gentlemen of the Society: I take pleasure and deem it a privilege to place in nomination T. V. Goode of Statesville.

For the benefit of a few who perhaps don't know Dr. Goode, let me say that I have known him from childhood. He was brought up in his home county. He is a man of the highest integrity, and I think he will perform the duties of this Board with high credit and distinction. (Applause.)

Dr. J. F. Highsmith (Fayetteville): Mr. President, I couldn't let the opportunity go of seconding the nomination of Dr. J. Street Brewer from Roseboro. I have known Dr. Brewer from childhood. In the section where he is practicing medicine, he has done a constructive work. It would do you all good to go to his office and see the equipment that he has for giving those people down there first-class service. I have known him from childhood. He is well prepared for this position.

It gives me great pleasure to second the nomination. (Applause.)

Dr. W. L. Tatum (Salisbury): As president of the Rowan Medical Society, it is indeed a pleasure and a privilege to be able to second

the nomination of Rowan County's outstanding son and practitioner in that county.

We endorse him wholeheartedly and unanimously. A general practitioner for years, a recent student at Mayo Clinic, a member of the American College of Surgeons, with two boys who are medical students, he is well qualified, and we ask this convention's endorsement of our man among your favorite sons, a county that has not been represented in twenty-four years in this Society. (Applause.)

Dr. W. R. Kirk (Hendersonville): Mr. President—

Dr. Tatum: Among all those outstanding qualifications, I thought this whole convention knew Rowan County's favorite son. The nomination I seconded was that of Dr. Harold H. Newman. (Laughter and applause.)

Dr. Kirk: Gentlemen of the Society: it give me great pleasure to nominate a man from the Tenth District of the state. We want to put in nomination the name of a man who has been a member of this Society since 1907, active in the practice of medicine, a man who has written many papers, one who belongs to the North Carolina Medical Society, the Southern Medical Society, and many others—patriotic societies—and one of the first men in the State of North Carolina, I think, to take up the specialty of diseases of children.

It gives me great pleasure to nominate Lewis W. Elias from Asheville. (Applause.)

Dr. Paul H. Ringer (Asheville): I can't use adequate words to second the nomination of Dr. Elias. He is a warm personal friend of mine. I have been closely associated with him professionally and socially for thirty years and more. He is a conscientious practitioner, a fine man, an individual who can do, and will do, nothing but what is of the highest order, and the type of man that we need on this Board of Medical Examiners.

I heartily second the nomination of Dr. Elias, and if I may be allowed the privilege of a double header, I also want to second the nomination most heartily of Dr. Goode of Statesville. (Applause.)

Dr. W. J. Lackey (Fallston): Gentlemen, I would like to second the nomination for every man here. I think all of them are capable of doing this job. I like them all and they are all my friends. But two fellows that I certainly would like to second the nomination of, and consider it an honor to do so, are Dr. James M. Northington of Charlotte and Dr. L. A. Crowell of Lincolnton. I have a deep place for those two fellows in my heart. (Applause.)

Dr. Paul F. Whitaker (Kinston): Mr. President, as Councilor of the Second District, I want to second the nomination of a man who is the unanimous choice of our district. This man is able and honest and fearless. Day in and day out he has fought the battles of organized

medicine. He is well qualified, both by character and training, for this important position. We should give serious thought to this matter of electing men to this position, and in behalf of the Second District, I would like to second the unanimous choice of that District in Dr. Karl B. Pace of Greenville. (Applause.)

Dr. John W. McGehee (Reidsville): I want to nominate a man who is in every way qualified for membership on the State Board of Medical Examiners, a man who will be a credit to the Board if elected, and to the Medical Society of the State of North Carolina, Dr. W. D. James of Hamlet. (Applause.)

Dr. C. M. Gilmore (Greensboro): Gentlemen of the State Society, I would like to make a suggestion, first, or a request, that we put opposite each man's name his district. I would also like to say that of all the doctors in North Carolina there is no man who comes in closer contact with all the practitioners, who knows more accurately our ambitions, our troubles, and our needs than the editor of *Southern Medicine and Surgery,* and the secretary of the Tri-State Medical Society.

I would like very much to second the nomination of Dr. James M. Northington of Charlotte. (Applause.)

May I add that in our district there is no man who holds more universally the respect of the doctors, who has labored more earnestly in his county and district medical societies who holds more closely the friendship of the members of the district than Dr. Frank Sharpe? I would like to second his nomination also. (Applause.)

Dr. Joseph O. McClelland (Maxton): Mr. President, I have known Dr. Holmes of Fairmont for a great many years. He is from my county. He is capable and will make a splendid man for the position. I therefore wish to second the nomination now of Dr. A. B. Holmes of Fairmont.

Dr. J. W. Tankersley (Greensboro): I arise to endorse the nomination of Dr. W. D. James. I don't think I have missed more than one meeting of this Society in twenty years, and I have never been here when Walter James wasn't here. He is a good old wheelhorse and deserves recognition. I was a classmate of Walter's, and I have been closely in touch with him throughout the last 30 years. I think we ought to put Walter James in as one of the Examiners, because he is eminently qualified, and I would just add the adjectives and the superlatives that have already been added to the other names and pass them on to you for him.

Dr. W. R. Griffin (Asheville): Gentlemen, I wish I had the ability to say what I want to about Dr. Goode, but I am not accustomed to public speaking, so I just want to stand here and tell you that I endorse absolutely what Dr. Vernon has said about Dr. Goode, and I want to

have the pleasure and privilege of seconding his nomination, and also, like Dr. Ringer, I want to doublehead, and endorse Dr. L. W. Elias.

Dr. MacNider: I can't let this opportunity pass without saying a word in favor of Dr. W. D. James. He was a pupil of mine. I have known him for thirty-odd years. His work was excellent. He was one of the first people in the South who recognized the value of x-ray treatment in skin cancer. He is a pioneer in that division of the profession and I heartily second his nomination. (Applause.)

Dr. Roy Norton (Raleigh): Gentlemen, I want to nominate a man who is doing general practice, a man who is eminently qualified to understand the problems that all of us have, Dr. Forest M. Houser of Cherryville. (Applause.)

Dr. S. M. Bittinger (Sanatorium): I would like to second the nominations of Dr. Houser and Dr. Goode. They are both fine men. Dr. Goode is a grand surgeon and a fine man, and Dr. Houser is a very fine general practitioner and very active in his section. I would like to second the nominations of both men.

Dr. S. R. Cozart (Greensboro): I wish to second the nomination of two men, but I feel that when we nominated Dr. Frank Sharpe we nominated one of the best men in that section of the state. I feel that if you will support Dr. Sharpe you are going to support a man who is absolutely behind the advancement of the medical profession, and I feel equally so if we support Dr. James.

When a man goes to a small town and builds what he has built, it is very good evidence that Dr. James is a man of ability, honesty, and integrity. He has the respect of the whole section of his state, and I very gladly second the nomination of those two men for the position of Examiners.

Dr. G. G. Dixon (Ayden): Mr. President, I don't know much about these folks. There are fourteen of them, seven of them will get left, seven will get on the Board. Karl Pace: I never taught him anything. He didn't go to my school. He might have been better if he had. It might have been worse if I had gone to school with him, but he is a good fellow, a good man, a good doctor, and good all the way around.

He is a competitor of mine. He will have to attend two board meetings a year.

I would like to second the nomination of Karl Pace. (Laughter and applause.)

Dr. H. D. Walker (Elizabeth City): I second the nomination of Dr. Holmes. I would also like to second the nomination of Dr. Pace.

Dr. Norris (Lumberton): I second the nomination of Dr. Holmes.

Dr. T. C. Bost (Charlotte): Gentlemen, I want to second the nomination of Dr. Northington from Charlotte. As you all know, he is the

only medical editor we have in the state. He is a very capable and thorough man. He is a man who has fought the battles of medicine since he has been editor of the *Journal,* and fought them in his pages, and many times at his own expense. He has fought for it and has had the interest of the doctors at heart in his work. I want to say especially that he is interested in all forms of organized medicine and he has shown through his pages that he is especially interested in the man doing general practice of medicine. (Applause.)

Dr. William B. Dewar (Raleigh): Mr. Chairman, I want to resecond the nomination of Dr. Coppridge, and move that the nominations be closed.

President Johnson: Gentlemen, you have heard the motion that the nominations be closed and the district of each man be written before his name. Is that seconded?

The motion was duly seconded.

President Johnson: All those in favor of the motion signify by saying, "Aye"; opposed, "No." It is carried.

Dr. John Q. Myers (Charlotte): J. M. Northington, 7th District; J. R. Terry, 9th District; W. M. Coppridge, 6th; Frank Sharpe, 8th; L. A. Crowell, Jr., 7th; J. S. Brewer, 3rd; H. H. Newman, 9th; Karl B. Pace, 2nd; A. B. Holmes, 5th; W. G. Suiter, 4th; T. V. Goode, 9th; Lewis Elias, 10th; W. D. James, 5th, and F. M. Houser, 7th.

Dr. Claude B. Williams (Elizabeth City): I just want to ask a question: Is it customary to sign your ballot?

Members: No.

Dr. Williams: I don't think anybody is going to stuff the box. (Laughter.)

President Johnson: Gentlemen, I wish to appoint as tellers the following ten men: Dr. John MacConnell, Dr. R. B. McKnight, Dr. Proctor of Raleigh, Dr. Broun, Dr. Lackey, Dr. Mann, Dr. Jones, Dr. Cobb, Dr. Dees, Dr. W. M. Jones of Greensboro.

When the ballots are taken up there are two rooms to the rear of the stage in which to make your count.

These gentlemen will take your ballots. After the first ballot, the Conjoint Session will reconvene.

Secretary-Treasurer Long: Gentlemen, there seems to be some confusion as to how you will prepare your ballot. Vote for seven men, any seven of the fourteen nominated.

President Johnson: The voting continues until seven men have had a majority.

The members proceeded to ballot.

President Johnson: Gentlemen, the tellers will give us their report now.

Dr. McConnell: A necessary majority was 165. It took 165 votes to be elected. We were fortunate in having six men elected on the first ballot. (Applause.) I will give you their names now. They are elected according to the rules: Pace, 269 (applause); Coppridge, 240 (applause); Sharpe, 196 (applause); Elias, 189 (applause); Brewer, 187 (applause); James, 175 (applause).

Those six men have received a majority. I will now read you the vote of the remaining candidates. It was necessary to have, remember, 165 votes—that constituted a majority. Crowell, 163; Northington, 151; Suiter, 121; Newman, 121; Terry, 105; Goode, 102; House, 65; Holmes, 43.

If there are no withdrawals from this list, there are still before us eight candidates.

Dr. John B. Wright: Mr. Chairman, I move that the next highest man be elected as the seventh man. (Applause.)

President Johnson: I am afraid it has to be a vote by ticket.

Dr. Wright: I move the rules be suspended then and the next man be elected, the next highest man.

Member: The sense of this body might be quite different on the next highest man. I think we ought to go on and vote.

President Johnson: I don't believe the motion has been seconded. There has been no second to Dr. Wright's motion so we will proceed to ballot. Unless someone wishes to withdraw his name we will proceed to ballot.

Secretary-Treasurer Long: Gentlemen, Dr. Houser asks that his name be withdrawn.

President Johnson: Gentlemen, you vote only for one man this time. Are all the ballots in?

The balloting proceeded.

President Johnson: The tellers are ready to report again.

Dr. MacConnell: We had no luck this time. No one was elected. There were 178 votes cast. A majority, of course would be 89. The vote reads as follows: Crowell, 60; Northington, 36; Suiter, 17; Newman, 30; Terry, 17; Goode, 16; Holmes, 3.

Those seven candidates are still before you.

President Johnson: Gentlemen, unless there are further withdrawals, there is nothing to do but to ballot again.

The balloting proceeded.

Dr. MacConnell: There is no majority—still running: Crowell, Northington, Suiter, Newman, Terry and Goode. Holmes received no votes on the last ballot.

There were only 108 votes cast. It would take 55 for a majority.

President Johnson: Read the number of votes:

Dr. MacConnell: Crowell, 42; Northington, 17; Suiter, 5; Newman, 17; Terry, 16; Goode, 8; Holmes, none.

I want to say that when the vote closes on the floor do not come back to the tellers' room to hand in votes later, and let one man put in one vote. There is no voting by proxy. Else we will throw the whole ballot out.

President Johnson: The tellers will distribute the ballots.

Dr. J. Buren Sidbury (Wilmington): Would it be possible to elect the highest man in this next ballot?

President Johnson: I don't think so, Dr. Sidbury. I think he must have a majority.

Gentlemen, the ballot is closed.

The balloting proceeded.

Dr. MacConnell: Gentlemen, there has been no election. 98 votes were cast. 50 would be a majority. Northington received 16; Crowell, 39; Suiter, 4; Newman, 16; Terry, 13; Goode, 8.

President Johnson: Dr. Terry requests that his name be withdrawn.

Secretary-Treasurer Long: Gentlemen, Dr. Suiter withdraws his name.

President Johnson: Dr. Goode withdraws his name.

There are three names to be voted on: Northington, Crowell, and Newman.

Dr. B. J. Lawrence (Raleigh): Will you please announce the vote on those three men as it stood the last time?

Dr. MacConnell: Northington, 16; Newman, 16; Crowell, 39.

The balloting proceeded.

Dr. MacConnell: Give me your attention just a minute. We can't go on voting here between three men, any one of whom is a good man, for so long. It takes 59 votes to elect. There were 116 votes cast. Northington got 28, Crowell, 54, and Newman, 34. Let us get together this time.

Member: Mr. Chairman, I move that this election be narrowed down to the high two.

Dr. Donnell B. Cobb (Goldsboro): I don't think that is very fair as far as the districts are concerned because the Seventh and Ninth dis-

tricts are fighting for a man on the Board. There are two men here in the Seventh and one in the Ninth. That will narrow it down to one man in the Seventh District and one in the Ninth District.

President Johnson: As I understand it it is not our province to rule out one man unless a man voluntarily withdraws.

Dr. Lawrence: Mr. President, this is a General Session, and it is within their prerogative to do such a thing if they want to, isn't it?

President Johnson: I understand that they had to be elected by a ballot.

Dr. Lawrence: The members would still be elected by ballot, would they not?

President Johnson: If the members voting confine their votes to the two highest that would eliminate the low man.

A motion to continue balloting was duly made, seconded, put to a vote and carried.

Dr. MacConnell: All right, prepare your ballots. The three men to be voted on are Northington, Crowell, and Newman.

The ballots were cast.

Dr. MacConnell: The votes cast were 109: Crowell, 55; Newman, 39; Northington, 15. Dr. Crowell is elected. (Applause.)

President Johnson: We will now have a film on the management of pneumonia, given through the courtesy of the Littauer Pneumonia Research Fund of New York University College of Medicine.

A motion picture entitled, "The Management of Pneumonias as prac-
pneumonias, given through the courtesy of the Littauer Pneumonia Research Fund of New York University College of Medicine," was given, during the course of which Dr. Roberts gave the following address:

"MANAGEMENT OF THE PNEUMONIAS" (motion picture)

From the Pneumonia Service of Dr. J. G. M. Bullowa
Harlem Hospital, New York City

Dr. Edward F. Roberts: This is the type of history chart used on the pneumonia service at Harlem Hospital. The onset of pneumonia is dated from the occurrence of the chill, whenever possible. You see these signs and symptoms listed on the days subsequent to the onset. They have previously been listed on the days preceding the onset, at the extreme left. If there is not a history of a chill, the onset is dated whenever possible from the occurrence of pain in the side, one of the two usually being present. Of course, cough, fever, and rusty sputum are the other most common signs and symptoms.

This patient exhibits the typical type of breathing in pneumonia. The patient is dyspneic. The chest is expanded, but there is not a great deal of excursion of the chest wall due to the pain experienced in taking a deep breath. That patient was a pregnant Negress who had a severe pneumonic infection.

In the early stages of pneumonia, if the chest is placed symmetrically, the examination may reveal relatively small changes, so it is permissible, even advisable, for the patient to sit up. In the later stages of the disease, with the patient more feeble, the examination is practically always made when the patient is in a recumbent position. In this position the mediastinum may sag, sometimes as much as two and one-half inches, and the sagging mediastinum may press down on the well lung, simulating signs of congestion and consolidation. So, with the patient recumbent, only the signs on the elevated side are significant.

Of course, in hospitalized cases it is preferable to use a portable X-ray machine, if possible, and avoid the necessity of moving the pneumonia patient any more than absolutely necessary.

Here you see a pretty well defined right middle lobe infection.

This is a lateral view of the same case.

In pneumococcus pneumonia we usually have an increase in the total white blood cell count. In the average Type I infection, the count runs a little above 20,000 cells per cubic m.m. In Type II the count averages a little below 20,000 cells.

These toxic granules indicate there have been changes in the cytoplasm of the white blood cells, so that they take the stain much more intensely, and supposedly indicate a severe grade of infection.

The serum treatment of pneumococcus pneumonia is type specific, so it is of fundamental importance to determine the invading type from some source just as soon as possible after the case is clinically diagnosed. Therefore, it is also of extreme importance to obtain a representative sample of sputum from deep down in the respiratory tract. Sometimes it helps to place the patient on the healthy side, providing some degree of drainage from the affected side, making it easier to obtain a typical specimen of sputum.

There are times when sputum cannot be obtained. It may be possible to determine the type by taking a throat swab, doing the typing directly on the mucus or after inoculation into a broth medium, or after inoculation of the positive broth culture into the peritoneal cavity of a mouse.

There are times when there may be a profuse nasal discharge that confuses the invading type in the lung, so occasionally it may be desirable to resort to the laryngoscope to get a good specimen. Laryngoscopy is more useful in children where it is relatively more difficult to obtain satisfactory sputum. In some pediatric clinics the stomach contents are aspirated and the type recovered from that source.

The Neufeld capsule swelling test is probably one of the most important advances during the past several years, enabling the more adequate handling of pneumonia patients. It usually means diagnosing the type well within one-half hour, instead of necessitating a delay of several hours, and the tendency more and more is to consider pneumococcus pneumonia as an emergency — to think of it much in the same way that we think of acute appendicitis. Certainly, there are times when even a few hours' delay may make all the difference between a favorable or a fatal outcome.

It is well to type all pneumonias, regardless of whether the clinical diagnosis is lobar or bronchial pneumonia. For one thing, a case may present itself at the outset as apparently a bronchial pneumonia with diffuse lesions, yet the picture may change suddenly, the lesions become definitely localized — and if one temporizes with such a case one certainly loses the best time for optimum results with specific therapy.

Then, too, about half of primary bronchial pneumonias are caused by pneumococci. It is perfectly true that Type I and Type II are responsible for only seven per cent of these cases, but there is reasonable hope that type specific therapeautic rabbit sera will become available by 1939 for most if not all of the "higher" types. Therefore, it becomes increasingly important to determine the bronchial as well as the lobar pneumonias which are amenable to serum therapy.

This illustrates capsule swelling on a Type III pneumococcus pneumonia. In this type the swelling zone is wider than in other types because, normally, the Type III organism has a larger capsule. In Type V we are apt to see the smallest degree of capsule swelling. On the average, such as in Type I, the swelling zone is as wide again as the organism itself, and typically has a ground glass appearance.

There are a few scenes now in animation that give a very theoretical conception of how capsule swelling occurs.

In this view of a single organism swelling, there is not as much pulling apart of the halves of the diplococcus as we sometimes see in a preparation under the microscope.

There have been reported 32 types, but since that report it has been recognized that Types XV and XXX are identical and VI and XXVI are identical, so there are actually 30 types that one can differentiate at the present time. Of course, that sounds like a very unwieldy number to deal with but, practically, Types I through VIII and Type XIV are responsible for over 90 per cent of the lobar pneumonia infections.

The typing from the sputum may be checked by inoculating some of the sputum into the peritoneal cavity of a mouse, after a few hours removing the peritoneal exudate, and doing the typing on the exudate. This procedure of mouse inoculation becomes a necessity when there are so few pneumococci in the sputum that one cannot find any in set-

ting the test up directly. It is possible to set up an unknown mixture against a group mixture of typing sera. If a positive reaction is obtained with the group mixture then the individual types within the mixture are tested.

As additional checks on the sputum typing, the mouse's brain and heart blood may be cultured in broth, and onto solid culture media.

Knowledge of invasion of the bloodstream by the pneumoccocus is particularly important with regard to prognosis and treatment. This chart shows the influence of bacteriemia on prognosis (non-serum cases). The lower column shows the mortality rate in non-bacteriemic cases: 17 per cent in Type I; 77 per cent in the bacteriemic cases (higher column). The same is also brought out for the other types—I, II, IV, V, VII, and VIII. In each instance, the mortality rate jumps up five to seven times, depending on the type, when bacteriemia occurs.

It is important to take blood cultures daily for several days. The culture may be positive as early as the second day, but it is most frequently positive after the fourth day. Of course, that constitutes all the more reason for giving serum early in the course of the disease, in an effort to check and perhaps prevent bacteriemia entirely.

This is 10 c.c. of melted agar being added to 1 c.c. of blood in each of the two Petri dishes. Shake them thoroughly, to insure uniform suspension of the red cells.

This is a bottle of culture medium, 25 c.c. of buffered beef heart infusion broth. After removal of the sterile paper cap the blood is injected through the sterile rubber membrane, which is self-sealing after the needle is removed, and the blood in the broth can then be sent to the laboratory for incubation.

This is another method of taking a blood culture into a Kiedel vacuum tube with powdered sodium citrate. If blood is allowed to clot the clot may enmesh the pneumococci. If you have only a few c.c. in the bloodstream, the clot may prevent obtaining a positive blood culture.

If the Neufeld capsule swelling test is carried out on a positive broth culture, sometimes we find a whole chain showing swelling, as illustrated here.

This chart shows the influence of serum treatment on bacteriemia.

In Type I control cases the incidence of bacteriemia is 25 per cent, dropping down to 19 per cent in the early serum cases. In Type II cases it is 40 per cent, dropping to 30 per cent in the early serum cases. In Type IV cases, it is 18 per cent, dropping to 4 per cent in all serum cases. In Type V it drops from 26 to 25 per cent — not much difference. In Type VII, it drops from 12 to 8 per cent. In Type VIII there was actually a little increase, from 19 to 21 per cent.

Of course the number of bacteriemias in these higher types is relatively very small, so the results don't have so very much significance.

In general, however, there is a definite tendency toward a lowered incidence as a result of serum treatment.

Lung suction is carried out, first, to determine the type; second, to determine the invading type when more than one type is found in the sputum; and third, it is done occasionally to determine the cause of the disease when specific therapy fails. It is important to do lung suction quickly while the lung is still, in order to prevent embolus formation from tearing the lung and veins, and in order to avoid asphyxia from bleeding into the tracheobronchial tree.

Lung suction has been done on over 3,000 pneumonia admissions, and the type of organism isolated by lung suction culture has checked with the type obtained from the sputum or from the blood in 93 per cent of the cases, which indicates quite clearly the reliability of the sputum typing. This close check also indicates that the sputum type is only rarely a carrier type, and that the incidence of infections due to mixed types is uncommon.

You see it is repeated anteriorly to show its application to an upper lobe infection. One seeing this done for the first time is apt to theorize that drawing a contaminated needle back through the pleural cavity would be most apt to increase the incidence of empyema. Analysis of the hospital records shows that this has not been true. The worst accident encountered in doing lung suction was an hemoptysis of 10 c.c.

In one of the early titles of the film, the advisability of going into the patient's history for any allergic manifestations was indicated. Also, before giving serum, some test for serum sensitiveness should be carried out.

A positive conjunctival test, which is actually a rare occurrence, shows up by reddening of the conjunctiva, by increased lacrymation, and sometimes by itching. If positive, it can readily be neutralized by instilling epinephrine solution. The positive intradermal test is a typical allergic reaction in the skin, consisting in a central wheal with irregular outline, surrounded by a zone of erythema.

The eye test is generally considered now as more reliable than the skin test, because sometimes the skin test will give mild positive reactions in individuals who can safely tolerate serum. The eye test, on the other hand, seems to pick out almost invariably only those patients who are dangerously sensitive and in whom use of the serum is contraindicated unless there should happen to be some unusual extenuating circumstance, such as, conceivably, the known presence of a bacteriema. (Knowing that four out of five Type I bacteriemic cases die without serum, one might just as well take the chance of a serum reaction.)

If it is decided to give serum in the face of a positive eye test, it has been demonstrated that the previous subcutaneous injection of one-half c.c. epinephrine solution, administered six minutes before the initial

intravenous injection of the serum, will help to minimize any subsequent reactions which might occur. Even though the patient's allergic history and sensitivity tests are negative, it is well to proceed very slowly with the first intravenous administration of the serum. Some men take five minutes but at least two minutes should be taken to give the first cubic centimeter of the dose. Thermal reactions consisting usually of a chill and occasionally an accompanying temperature rise used to have a fairly frequent incidence, but now occur in only about three per cent of the cases with refined and concentrated serum.

The first dose of 10,000 units is really a test dose—followed in two hours, if no untoward reaction occurs, by 20,000, and in another two hours by 40,000. On this service, in another four hours the patient's serum is tested for agglutinins against the infecting type. If the reaction is negative, another 40,000 unit dose is given, and so on, as indicated. The dosage must be larger for each elapsed day of the disease, for extensive consolidation of the lung, for patients over forty years of age, if bacteriemia or pregnancy is present, or if a complication is present.

The pulse and the temperature drop and the clinical behavior are the most practical guides we have for controlling serum dosage. As a supplementary aid one can utilize this agglutination test.

A drop of the patient's blood or serum is set up on a slide against a drop of killed suspension of the infecting type of pneumococcus. Another drop of the patient's serum is set up against a drop of killed suspension of another type, as a control. These smears are allowed to dry, fixed to the slide, stained, and examined for agglutination. If the patient's serum does not show agglutinins against the infecting type, as evidenced by a negative or minus plus reaction, it is reasoned that the protective anti-bodies contained in the anti-pneumococcic serum have all been used up, that the infection still has the upper hand, and so further doses of therapeutic serum should be given. If the patient's serum does show agglutinins against the infecting type as evidenced by a plus minus or strongly positive reaction, it is reasoned that the protective anti-bodies have not all been used up, that the patient is probably convalescing, and therefore does not need further doses of therapeutic serum.

On this service, the test has been a reliable guide in each type with the exception of Type II. Sometimes in Type II, a bacteriemia may persist even when agglutinins can be demonstrated in the blood stream.

In a study of bacteriemias at Bellevue Hospital, the interesting observation was made that about ten per cent of Type II bacteriemias coming to autopsy showed an endocarditis.

This incidence of thirteen per cent serum sickness is based on an analysis of 868 Type I patients observed over a ten-year period.

This chart shows the influence of serum treatment on the total mortality, from 1926 to 1937. The control rate in Type I is thirty-one per cent. In the total serum cases, the rate has been reduced to thirteen and

a half per cent. In the early serum cases, the rate is further reduced to eight and one-half per cent, and an analysis of the results during the past three years shows that in the early serum cases the mortality rate is only six per cent in Type I. In Type II, a control rate of forty per cent is reduced to thirty per cent in the total serum cases and further to twenty per cent in the early serum cases. In Type IV, there was a reduction from twenty per cent to ten per cent in all serum cases. In Type V, from twenty to seven and one-half per cent, all serum cases. In Type VII, seventeen per cent to six per cent, all serum cases. Type VIII, fourteen per cent to nine per cent, all serum cases. Notice Type VIII has a lower control rate than any of the other types.

This is the influence of serum treatment on the bacteriemic mortality. The control rate in Type I is seventy-nine per cent and is reduced to thirty-seven per cent in the total serum cases, and further reduced to twenty-five per cent in the early serum cases. In Type II the control rate of seventy-one per cent is reduced only to sixty-four per cent in the total serum cases but further to forty-four per cent in the early serum group. Reductions in other types are Type V from sixty to twenty-four per cent; Type VII from seventy-one to twenty-five per cent; and Type VIII, from forty-two to thirty per cent.

In the application of rabbit serum to the treatment of pneumococcic pneumonia, this blood pressure test has developed in conjunction with the so-called processed rabbit serum at Rockefeller Institute Hospital. This simply means that the serum is heated to fifty-six degrees Centigrade for one-half hour and is absorbed on kaolin, a form of animal charcoal.

It was worked out because the skin and the eye tests were not found to be consistently reliable. The blood pressure is taken, and then one-tenth c.c. of the serum to be administered is diluted in saline solution and is given intravenously. If the fall of blood pressure is no more than twenty millimeters of mercury, and if the increase in the pulse rate is no more than fifteen beats per minute over the subsequent five minute period, it is considered safe to proceed. More recent results with refined and concentrated rabbit serum indicate that more reliable skin and eye tests are being obtained.

It is estimated that the dosage of the refined and concentrated rabbit serum is equivalent to the dosage with refined and concentrated horse serum in each type with the exception of Type III. In Type III we know, from the laboratory standpoint, that the potency has been relatively weaker than in other types and we have no previous experience in Type III with horse serum to guide us, so it is necessary that the dosage be about twice that of the average in other types.

In the most recent report that comes from Rockefeller Institute Hospital, during the American College of Physicians' meeting, eighty cases

were reported covering ten different types with an average mortality of ten and a fraction per cent. Fourteen of those were Type III cases, with four deaths.

The first requisite for oxygen is the increased demand due to the fever. It has been estimated that an additional seven and one-half per cent concentration of oxygen is required for each additional degree of Fahrenheit the temperature is elevated.

The second requisite for oxygen is the diminished area of absorption due to consolidation of the lung. The extent of this diminished area of absorption can be appreciated if one realizes that the total surface area of the alveoli of the lungs is sixty times the total unstretched skin surface area.

This type of nasal inhaler is used almost routinely on the great majority of patients for dyspnea and orthopnea. The tent and chamber are reserved chiefly for patients who are definitely cyanotic.

Through the inhaler, it is possible to reach a concentration of thirty-five per cent oxygen, which is just about double the concentration in the air we normally breathe. As you see, this type of inhaler is tolerated very well by even quite small children.

In the tent, and chamber as well, the concentration of oxygen is maintained in the neighborhood of fifty per cent, with a relative humidity of sixty-five per cent. Here the oxygen attendant is drawing a sample of air from the tent and analyzing it for concentration of oxygen and carbon dioxide. It is well to make a fairly frequent analysis because of the possibility of leakage under the tent folds, draped on the bed, and of course once in a great while there may be some mechanical interruption with the oxygen flow.

This oxygen attendant you see is not simply one of the hospital orderlies, but a man who has been thoroughly trained in all methods of oxygen administration and analysis. He devotes his time entirely to oxygen therapy.

In strapping the chest for pleuritic pain, it is customary to place the strips of adhesive farther beyond the midline than was illustrated in that previous scene. It is becoming increasingly appreciated that pneumonia patients should receive as full a diet as they can take. A liberal amount of salt is included to replenish the diminished chlorides. This is particularly necessary when there has been much sweating. It is well to include Vitamin C in the diet, because the Vitamin C reserve is depleted in practically every acute infection.

Of course, it goes without saying that good nursing care is essential in the treatment of this disease.

This is probably a very familiar procedure: giving five per cent glucose and saline solution by the intravenous drip method. A pinch clamp on the tubing controls the rate of flow.

Morphine has been avoided for sleeplessness and delirium, because of the tendency of the drug to depress the respiratory center. Morphine also has a tendency to increase intracranial pressure and therefore may increase the patient's headache.

It is a little amusing here to note the difference of opinion between the delirious patient and the nurse as to whether the covers shall be pulled up or not. Apparently after a little while the patient decides the nurse is not going to argue about it so he might just as well put them back up, himself.

Avertin is also a respiratory depressant and therefore a drug which should be used very cautiously in pneumonia.

This title (Empyema) refers particularly to Type I patients. If serum treatment was instituted prior to the third day no empyema developed. In Type V patients, none treated before the fifth day developed empyema.

This patient had empyema and failed to survive his pneumonia chiefly because he was treated relatively very late in the course of the disease.

Fifty per cent sucrose solution is given in amounts of from fifty to one hundred c.c. by means of a syringe and needle fitted with a three-way stop-cock.

During the past year or so sucrose has been used in preference to glucose because of the larger molecule, and because of the fact that sucrose is not burned up in the body nearly so quickly as glucose.

In applying the Fox cup, air is pumped through the neck of the pump into the elastic inner chamber placed against the skin. Pressure on the valve releases the air from the inner chamber, creating suction.

In this scene, fifteen liters of oxygen per minute are being given under ten centimers water pressure, through a Douglas bag for pulmonary edema. The rationale behind this procedure is that the pressure forces small bubbles of oxygen through the edematous fluid in the alveolar spaces of the lung, thereby bringing the oxygen in closer contact with the blood capillaries.

This chart illustrates that the acute stage of the illness is terminated within six to thirty-six hours after the institution of serum treatment in Type I cases, whereas in non-serum Type I cases the mode is eight days.

This illustrates a case admitted on the third day of the disease, given three doses of serum, with a drop in pulse, temperature and respiration well within a twelve-hour period.

Now we have actual temperature charts on patients, first, on a non-serum Type I case, then on a serum-treated Type I case. Regardless of type, the most striking clinical effect in patients who do respond to specific serum therapy is the hastening of the crisis, which is reflected usually by a saving in the number of days of sickness, either at home or in the hospital.

About two years ago it was worked out at the University of Minnesota Hospital, comparing recovered patients, serum-treated and non-serum treated, that there was an average saving of eleven days' hospitalization in the group which received specific serum. Of course, that affords a basis for several economic arguments, and yet I think the most important consideration in evaluating any type of therapy is that of mortality reduction. (Applause.)

President Johnson: Thank you, Dr. Roberts.

The Secretary has some announcements to make.

Secretary-Treasurer Long: Gentlemen, the sections this afternoon will meet in the following rooms: Practice of Medicine in this room, at 2:00 o'clock. The Section on Surgery meets in the Ladies' Card Room, and the Chairman, Dr. Julian Moore, requests me to state that it will meet at 2:00 o'clock—if there is nobody present but Dr. Moore, it will start off at 2:00. The Section on Ophthalmology will meet in the Men's Card Room.

The final session of the House of Delegates will meet in the West Ballroom beyond the lobby at 3:30 o'clock.

President Johnson: The meeting is adjourned.

Whereupon the session adjourned at 2:10 o'clock.

CONJOINT SESSION OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA AND THE STATE BOARD OF HEALTH WEDNESDAY

May 4, 1938

The session convened at 12:25 o'clock, Dr. S. D. Craig, President of the North Carolina State Board of Health, presiding.

Chairman Craig: As president of the North Carolina Board of Health, I call to order the meeting of the Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health.

I want to take this opportunity of thanking the members of the State Board of Health and the executive staff, in fact, all employees connected with the State Board of Health, for their loyal and untiring efforts during the past year.

The smoothness and efficiency of the organization has been due largely to our Secretary, Dr. Reynolds, and his efficient and worthy assistant, Dr. Cooper.

Dr. Reynolds' report is long, and it has been his custom to give you

only a synopsis of it, but I hope when you receive the full report you will read it in full.

Dr. Reynolds! (Applause.)

Dr. Carl V. Reynolds: It is an ill wind that blows no man good. It has bee nmy custom to read this report to more chairs than men, so I am awfully pleased at the attendance now. I am wondering now if you can hear me in the back of the room.

Don't get excited, gentlemen, or misled, for I don't propose to read all this document you see, that I hold in my hand. I am just going to read for about ten or twelve minutes, with a request that you read it when you return home and get it in the Transactions. It is important, not because I have compiled it, but to show you gentlemen what your State Health Department is really doing. It is a report more or less in detail of the activities of the various divisions, and I hope you will read it when you get home. Briefly then, I will just give you a few points.

Dr. Reynolds then presented his prepared report, making the following interpolation before the words, "I would like to call your particular attention to another activity," at the bottom of page 5: Just a word there, gentlemen, to show you the rapid growth of that laboratory: We are equipped to do 75,000 Wassermanns. Last year we were doing 120,000 Wassermanns. This year we are doing 220,000 Wassermanns.

Gentlemen, I don't believe the medical profession of North Carolina appreciates the value of that laboratory and what it saves the taxpayers of North Carolina. We are not on a retail basis in that laboratory but on a wholesale basis, saving the taxpayers of North Carolina by actual figuring—I am not padding the figure—$3,000,000 per year, at a total cost, including the amount of serum that is sold for a nominal sum and received at the laboratory, plus the appropriation of the state for the laboratory, of $113,000. That is all it costs to save the people of North Carolina, $3,000,000 per year.

Dr. Reynolds then concluded his report. (Applause.)

ANNUAL REPORT NORTH CAROLINA STATE BOARD OF HEALTH TO CONJOINT SESSION STATE MEDICAL SOCIETY

Carl V. Reynolds, M.D.
Secretary and State Health Officer
May 4, 1938

In the annual report of the North Carolina State Board of Health to the Conjoint Session of the State Medical Society on May 6, 1936, the statement was made that, "your State Board of Health has complied with all requirements, and plans have been approved by the proper

authorities in Washington, and the money is now in the state treasury, subject to check, for carrying out the projects."

Gentlemen: It is desired to call to your attention that this was just two years ago and I say to you that things have been happening so fast and furiously that it would take a volume to review for you the accomplishments. In this report we are presenting to you a "bird's-eye view" of the 1937 activities carried on in the various divisions. I desire to call to your attention a few of the outstanding features for the year.

The Zachary Smith Reynolds Foundation Fund

It was on December 18, 1937, and through the goodness of the trustees of the Zachary Smith Reynolds Foundation, Incorporated, that the largest donation to preventive medicine ever made in the South was tendered. A check for $100,000.00 was turned over to the health officials to aid in the fight against syphilis. This fund is to be used exclusively for a militant campaign in North Carolina against the dread disease and scourge—syphilis—and one of the greatest hazards to mankind's happiness. Long before the government began to realize its responsibility in the prevention of disease and the preservation of health of the citizens as a means of bringing about better social and economic conditions and in the promotion of human happiness and prosperity, philanthropists led the way. This magnificent philanthropy for which I express, I am sure, the deep gratitude of the entire population of North Carolina, will bring to the realization one of the fondest dreams of the State Board of Health in that it will enable us to accomplish, in the near future, some of the objectives that have seemed years off.

Time will not permit a discussion here of the debt of gratitude we owe these benefactors, but can never repay, nor can we pay just tribute to medical science for its unselfish, sacrificing, painstaking research that led to the discovery of means for the prevention and cure of disease.

Medical science has developed far in advance of society's willingness or ability to receive all its findings. This is due, in part, to ignorance, indifference—but to a greater extent, to inability to meet the expense.

This money which has been made available to our people to be used in connection with other funds allotted to the State Board of Health will first enable us to set up a very definite program in the war on syphilis. It takes a well-organized, qualified, personnel in an organization, with the enthusiasm and the determination to do a good job; it takes the support and coöperation of our people, and it is a challenge to the medical profession and to the public health workers, dentists, and pharmaceutical profession to fight, shoulder to shoulder, in the eradication of this "Destroyer of Mankind."

It is, in the opinion of the members of the State Board of Health, and the staff, that in the expenditure of these funds for syphilis control

purposes, the area must be carefully selected wherein a definite need has been shown and adequate coöperation is assured. It is realized that no adequate control program could be established on a state-wide basis but by the concentration of a program in selected areas, it is believed a good demonstration can be accomplished. The program must be adequate to handle the problem in a given community.

The areas tentatively selected embrace approximately one-third of the population of the state and will be operated in eighteen health departments including such cities as may be located in the respective counties.

The LaFollette-Bulwinkle Bill

On Tuesday, February 15, 1938, your Health Officer appeared, along with many other interested witnesses, before a subcommittee of the Committee on Commerce of the United States Senate, in support of the LaFollette-Bulwinkle bill for an adequate appropriation for the Federal Government's participation in the cure and control of syphilis in the United States. Again, he appeared at a hearing on Tuesday, April 12, 1938, before a subcommittee of the House, in support of the LaFollette-Bulwinkle bill.

I am happy to bring to you this morning, the information that an appropriation for the sum of $3,000,000.00 for the fiscal year starting July 1, 1938-'39; the sum of $5,000,000.00 the second year; $7,000,000.00 the third year, and a sufficient sum to carry on an adequate program for ten years thereafter, has been passed by the Senate.

The situation in the House, up to the moment, is an appropriation similar to that passed by the Senate and has been acted upon favorably by the subcommittee, and it is expected to be favorably acted upon by the House when it reaches the floor.

We have reason to believe that this bill for sums as indicated above will meet the approval of the President.

For your information we would add that state allocations out of this fund will be distributed as have been the funds out of the $8,000,000.00 appropriated as supplemtary aid to the states for public health work.

I firmly believe that this LaFollette-Bulwinkle bill carrying an appropriation as above outlined will be enacted into law and it will enable us to prepare for, and start a syphilis control program in all organized counties within the State of North Carolina during the next fiscal year.

With these sums being made available as supplementary to state, municipal, and county funds, it is our duty to society and to our commonwealth to eradicate syphilis, the greatest enemy to man's physical fitness.

The New Laboratory of Hygiene and Laboratory of Hygiene Farm

We are happy to remind you of another dream that is fast coming true. On December 16, 1937, a bond issue for $160,000.00 for the erec-

tion of a new State Laboratory of Hygiene and Laboratory of Hygiene Farm unit, was sold. Plans, specifications, and details for a fire-proof Central Laboratory Building, approximately 135 feet by 50 feet, three stories in height, to be located on Caswell Square in the city of Raleigh, N. C., adjacent to the present offices of the State Board of Health, have been completed. The bids for the actual construction are being temporarily delayed pending a grant from the PWA of $130,000.00 which will enable us to have a larger and more modern building to meet our fast growing demands.

We have purchased a 280-acre farm five miles west of the city of Raleigh on U. S. Highway No. 1 on which there will be constructed operating buildings, horse and sheep barns, and rabbit and guinea pig houses, at an approximate cost of $50,000.00. This will enable us to have an accredited laboratory, that is a laboratory which meets the approval of the National Institute of Health for intra-state shipment of biologics. This will increase the department's usefulness many times by making available many additional immunizing and neutralizing agencies used in the prevention of disease and the combating of human suffering throughout our great State of North Carolina.

Maternity and Infancy

I would like to call your particular attention to another activity in our maternity and infancy program. During the last eighteen months 11,500 potential mothers have had the benefits of a careful medical examination of which they would have otherwise been deprived. Wassermann tests have been made on each mother and an average of 12 per cent of those examined were found to be syphilitic. About 10,000 babies have been brought to these centers and received medical examinations during the year. There have been operated 130 clinics located in 43 counties; 165 practicing physicians were participating in this work. This outstanding work, in our opinion, will be the means of eventually eliminating the midwives and of getting all women and babies under the care of competent physicians in the years to come.

County Health Work

In the Division of County Health Work there were in 1933 thirty-six full-time local health departments whereas in 1938 the total number of counties now provided with full-time local health service is sixty-seven, serving a population of 2,775,116 of the 3,250,000 people within the state. There are employed, at present, in these health departments the following personnel: 60 health officers; 207 public health nurses; 108 sanitary officers; 86 clerks; 14 laboratory technicians; 5 dentists (this does not include the work of the 27 dentists working out of the State Health Department), and 7 other medical officers, making a total of 487 full-

time personnel employed. A total of 59 dental programs are being provided in these health services.

War Against Pneumonia

On October 21, 1937, at a quarterly meeting of the State Board of Health held in the offices of the Health Building, a committee was appointed by the President of the Board, Dr. Hubert B. Haywood being Chairman, for the Study of Pneumonia Control in North Carolina. The North Carolina State Board of Health, with the aid of the State Medical Society and the Medical School Faculty of Duke University, set up a Commission for Pneumonia Control and Study in this state. Through the courtesy of the Duke University Medical School and the coöperation of Dr. Wilburt C. Davison, Dean, and Dr. Frederick M. Hanes, Professor of Medicine, a laboratory course of instruction in Pneumonia typing and other scientific procedure concerned with the treatment of pneumonia, was offered free of charge to technicians of the state and the doctors during the week of January 24-29. On January 28 a symposium and clinic on pneumonia was offered to the physicians in North Carolina and adjacent territory. This symposium was attended by several hundred physicians within the state; sixty technicians throughout the state availed themselves of the opportunity of this course of training and we have now, as a result of this study, sixty qualified pneumonia typists located in various cities, towns, and health departments within the state.

It is planned by the North Carolina Pneumonia Commission, by laboratory procedure, lectures, demonstrations and motion picture films, to carry to the profession and to the general public, the advisability of, and the necessity for, the early diagnosis of pneumonia through the typing method in order that the serum indicated could be used at the earliest possible moment, realizing that to be most effective, the serum must be given during the first four days of illness. The results from the serum administered are, therefore, most successful if given at the time of the earliest recognition of symptoms.

It is needless for me to call your attention to the serum treated death rate; to illustrate, in Type I, 15.7 per cent to non-serum treated death rate, 32.7 per cent. Doctor Haywood says, "the North Carolina State Board of Health and the medical profession of the state have a vital interest in pneumonia control and the reduction of its death rate, and plan to keep step with other progressive states in the fight on this disease which has been designated, 'the Great Captain of the Armies of Death'."

Realizing that there are in the United States about 100,000 deaths from pneumonia; realizing that in North Carolina last year we had 2,945 (provisional) deaths from pneumonia, all forms, and if you please, 1,800 deaths from Type I pneumonia, it kindles in my mind a new dream which is the establishment of a "pneumonia farm" from which we

can produce for our citizens in the State of North Carolina, serums for free distribution, or at least at a minimum cost, which will place it in the hands of the medical profession to be used upon those who need it.

DEPARTMENTAL REPORTS

Division of Preventive Medicine

For the year ending April 1, 1938, this division is able to report progress along many lines. A brief synopsis of the chief accomplishments of the division work as a whole may be best described by taking up one by one the work in the various departments comprising this division.

1. *Health Education.* The most notable achievement in this division seems to the Director to be the increasing demand for the *Health Bulletin.* During the year about 7,000 additional names have been added to the mailing list. This, in spite of the fact that special efforts to revise the list and bring it up-to-date have been made. This effort has resulted in the removal of several thousand names which were considered dead on the list. The mailing list today is probably as nearly a "live" list as we have ever had. There has been no special effort at all made to procure names for this list. It comes probably as a result of the material having been published in the *Bulletin* for the past year being a little above the average in the character of the information imparted. Such, for example, as the Dr. H. A. Royster article in the April issue, and also from the fact that some of the health officers and some of the Children's Bureau nurses have found the *Health Bulletin* helpful in their work.

There have been several revisals of special pamphlets, and altogether the available literature is better today than it has been for some years.

An important feature of the educational work this year has been the Health Institutes arranged by the State Health Officer and a representative of the State Department of Public Instruction in which a series of Health Institutes for teachers were inaugurated on March 10 and which, of course, extended through the month of April. This plan provided for a series of lectures in 37 different places, representing every section of the state. Doctor Norton and Mrs. Guffy of this department, Miss Thomas of the State College, and Mr. Perry of the Department of Education, have borne the brunt of this work. They have performed a very creditable service. It should result in a great deal of good which will probably become more apparent at the opening of schools next fall.

2. *Personal Health Service.* The personal mail service which is a sort of personal hygiene service has been heavier this year, apparently, than in many years. Advice has been given on an average to about 250 people each month from every section of the state. We have received gratifying evidence from many quarters of the helpfulness of this service.

3. *School Health Supervision.* This work has been somewhat curtailed during the past year on account of the illness of two of the nurses

who were stricken about the last of December. A third nurse, Miss Hendrix, was granted a leave of absence beginning the first of January for post-graduate work. A fourth nurse, Miss Beam, was assigned to special duty in Cleveland County on the first of January. Therefore, the usual service in the field of school health supervision has been considerably curtailed. It is safe to say, however, that important service which was greatly needed has been rendered during the year to several county health officers, particularly in strengthening their work for midwife control as well as routine inspection of school children.

4. *Maternal and Child Health Services.* Naturally, the greatest accomplishment and the hardest work has had to be done in the field of Maternal and Child Health Services. Provision for the Maternity and Infancy Health Centers has been expanded and the services increased materially. The work as carried on this year has been done in counties having whole-time health departments, with the exception of Ashe, Alleghany and Polk, which were made special demonstration centers. The work of providing medical examination for expectant mothers among the class of women who have no family physician and who depend on midwives, and also the provision for medical examination at monthly periods or less for the babies of such women has been an important part of the division work for the past year. During the year not less than 10,000 women have had the benefit of a medical examination which would have not received it otherwise. Wassermann tests have been made on everyone of these women and an average of about 12 per cent have been found to be positive. About 10,000 babies have been brought to these Centers and received medical examination during the year. Centers in active operation as of April 1 comprised about 130 in number located in 43 counties. One hundred and sixty-five practicing physicians were participating in this work. A total amount sufficient to pay in full about 45 nurses known as Children's Bureau Nurses was being expended through this department and used to expand the nurse service of whole-time county health department staffs. The success in getting prenatal medical examinations made and in getting the examination of babies made satisfactorily by competent physicians and getting the advice put into practice is dependent upon the ability and industry of the nurses employed and the ability and industry and attitude of the county health officer in charge. The most encouraging reports were received from nearly everywhere with only a few exceptions during the month of March. Properly handled, this work has come to stay, and it will be the means eventually of eliminating the midwife and of getting all the women and babies under the care of competent physicians in the years to come. Naturally, it will take many years to reach such an ideal state, but if competent management and inspiration is forthcoming permanently from this division, the necessary support from the state at large will sooner or later be procured. It is an ambitious program and

one worthy of the best mettle of every member of the staff from the State Health Officer down.

5. *Crippled Children's Service.* We have just completed a two years' experience in the direction of the coördinated Plan of Services for Crippled Children in North Carolina. This two-year period has demonstrated the wisdom of the original features of the plan. A recent comparison with similar activities among the other states indicates that satisfactory progress has been made in the projection of these services in North Carolina.

Hospital services have been available at the North Carolina Orthopædic Hospital which now has a bed capacity for 160 children with an annual intake of more than 400 individuals. In addition to this facility, a number of general hospitals have been utilized and per diem services for individual children have been purchased through the use of Social Security Funds allotted to the state. During the past year more than 900 children have been authorized for admission to the general hospitals, and very near that number have been admitted and discharged, after having received treatment. Ten qualified orthopædic surgeons are cooperating in the extension of medical services under the plan, and these conduct the several clinics which are increasingly serving as adjunct to the services set out above. During the same period more than 100 appliances have been purchased in the case of individual children.

There are now 18 clinic centers for crippled children located strategically throughout the state and in reach of every section, as well as the people. There were more than 5,000 children admitted to these during the past period under consideration where diagnostic and treatment services were rendered. Reports indicate that there were more than 500 cast procedures in the case of these children, approximately 200 brace measures undertaken, some 300 corrective shoe adjustments, and near 400 corrective exercises advised.

The field staff has held more than 1,000 conferences with health and welfare officials in the process of extending services to indigent cripples throughout the state. There have been more than 200 clinic attendances on the part of these field workers where assistance has been rendered to more than 2,000 individual cripples by these field workers. Report further indicates that there are approximately 400 field visits to the homes of newly located crippled children and approximately 1,000 visits to the homes of old cases of crippled children. Approximately 350 persons have been referred by the field workers to the Department of Vocational Rehabilitation, an agency concerned with the educational and vocational guidance and training of physically handicapped individuals.

It is apparent that adequate funds are not available to the total needs of crippled children within the state; however, the medical aspects of these needs are being much more adequately met at this time.

Division of County Health Work

During the last year full-time local health service has been extended to fourteen additional counties, namely: Anson, Johnston, Martin, Stanly, Burke, Caldwell, Chowan, Greene, Chatham, Transylvania, Dare, Hyde, Tyrrell, and Washington counties. The total number of counties now provided with full-time local health service is sixty-seven. In addition, there are six City Health Departments, namely: Asheville, Charlotte, Greensboro, High Point, Rocky Mount, and Winston-Salem. The total number of health units serving these six cities and sixty-seven counties is fifty-five.

There are employed at present in these health departments the following personnel: sixty health officers, two hundred and seven public health nurses, one hundred and eight sanitary officers, eighty-six clerks, fourteen laboratory technicians, five dentists, and seven other medical officers, making a total of four hundred and eighty-seven (487) full-time personnel employed. A total of fifty-nine dental programs are being provided in these health services.

Since July 1, 1937, there have been trained, or are now in training, twelve health officers, forty-six public health nurses, sixteen sanitary officers, three sanitary engineers, and four laboratory technicians, or a total of eighty-one trainees. The training of these persons has been made possible through funds provided from Social Security or the Reynolds Foundation. This personnel has been trained in the Division of Public Health at the University of North Carolina, Johns Hopkins University, Vanderbilt University of Michigan, University of Minnesota, Richmond Division of the College of William and Mary, and George Peabody College for Teachers, Saint Phillips Division of the Medical College of Virginia, Columbia University, and the Maternity Center Association in New York City. All new field personnel have had training in the field of training centers in the Durham City-County Health Department and the Orange-Person-Chatham District Health Department. This training has consisted of at least one month to acquaint them with the public health practices, procedures, and laws of the State of North Carolina.

Consultation service has been rendered to the local health units through the Division of County Health Work in Public Health Administration, Public Health Nursing, Public Health Engineering, and statistical work in developing local public health programs and raising the standard of service performed.

In December 1937 there was a one-day meeting of all health officers in the state called to meet with the staff of the State Board of Health in Raleigh. This meeting was well attended and it was decided by the health officers present that it would be advantageous to make the meeting an annual affair in the future.

Through the coöperation of the United States Public Health Service, nursing institutes are now being held for all the public health nurses of the state to acquaint them with the public health nursing problems in connection with the Venereal Disease Control Program. These institutes have also been well attended and are serving as a stimulus to the nursing personnel in handling this particular problem. It is expected that similar institutes will be conducted in the future in connection with specific problems confronting public health nurses.

Division of Epidemiology

The tremendous expansion in venereal disease control work in North Carolina, which is nominally under the supervision of this division, is undoubtedly the highlight of the year covered by this report. The publicity given this problem was reflected in a vigorous increase in the number of reported cases of syphilis, e.g., during the months of May, June, and July, 1937, the reporting of syphilis increased by 177 per cent over the reporting of this disease for the same period of the preceding year. These comparative statistics alone indicated to us the growing interest in this problem and gave promise of more thorough coöperation by the public and the physicians of the state than we had hoped for before.

On July 1, 1937, Dr. G. M. Leiby, Venereal Disease Consultant with this division, went to Johns Hopkins School of Hygiene to enter upon a course of training in Syphilology for a year. Dr. F. S. Fellows, P. A. Surgeon of the United States Public Health Service, was assigned to North Carolina to act as Venereal Disease Consultant in Doctor Leiby's absence. The greater portion of Doctor Fellows' time has been spent in the field visiting the venereal disease clinics in the state, studying treatment procedures and methods of handling cases in these clinics. The collection of this information was considered necessary before any recommendations could be made for the standardization of our clinic procedure. At the time this report is being made there are one hundred and one venereal disease clinics in North Carolina. An effort is constantly being made to obtain the establishment of new clinics, especially in those counties that do not now offer such facilities to its citizens.

In line with this venereal disease control program a copy of the Committee Report on the Public Health Control of Syphilis, which was prepared at the Conference of State and Territorial Health Officers in April 1937, was sent to the secretary of each county medical society in North Carolina. It was felt that a careful study and discussion of the plan set out in this report would promote greater coöperation between the private physicians of the state and Public Health authorities.

During this year a number of forms used in this division have been revised or designed. Among these were the venereal disease clinic record

and the typhoid fever investigation form, both revised to provide more specific information on the case and thus facilitate follow-up work, especially for the clinic record. Also designed was the domestic servant health certificate, which is furnished to the physicians and health officers of the state for use in the examination of servants for active tuberculosis or venereal diseases, as required by law. Two other forms may be mentioned, viz., the "Notice of Failure to Take Treatment for Venereal Disease" and the "Venereal Disease Detention Order." These forms are for the use of the health officer locally, the first form to be sent to the delinquent syphilitic direct and the second form to be served by the Sheriff of the County. These forms are used quite extensively.

In July, the Entomologist and two Engineers selected to study at the malaria training stations in Georgia, Florida, and Alabama, preparatory to the establishment of a Malaria Investigation and Control Unit in this Division, entered upon that course of study. In addition, two malaria technicians were given a ten-day course of training at the station in Savannah, Georgia. The personnel of this unit returned and began active work in the field early in the fall. In the winter months the Director of this division held conferences with various local health officers relative to beginning a program in their counties. After satisfactory arrangements were completed two counties, Robeson and Edgecombe, were surveyed by the thick smear method and approximately 10,000 slides were taken from those two counties. The Entomologist and Engineer made epidemiological investigations, taking histories and preparing maps of the various areas surveyed which gave essential information on each project.

No notable outbreaks of diseases requiring epidemiological investigation occurred during this year. Several smaller outbreaks were investigated, however, including that of cerebrospinal meningitis in Stokes and Yadkin counties, which did not show any serious development.

During the early part of the winter a supply of drugs for the treatment of syphilis in the various health department clinics was obtained and its distribution begun. This supply of drugs consisted of neoarsphenamine, bismuth subsalicylate in oil, sulphur-sphenamine and sterile distilled water.

In December the State Board of Health was pleased to announce the gift of $100,000.00 from the Zachary Smith Reynolds Foundation, Inc., of Winston-Salem, N. C., which is to be used exclusively for syphilis control in this state and to be administered through this division. Following the announcement of this gift various conferences with trustees of the foundation and health officials have been held. A plan of allocation of the funds and their administration has been developed and is being presented to those health officers whose departments were selected to participate. The response of these health officials and interested groups of citizens in their communities has been very gratifying. They have

readily agreed to the plan whereby the local department must match funds with those allocated from the Smith Reynolds Foundation donation in order to participate.

During the early part of the winter preliminary meetings of the Pneumonia Control Commission of the State Board of Health were held and plans made for a short intensive course in the typing of pneumonia serum, which was held for laboratory technicians of the state at Duke University in January 1938. Sixty-eight persons registered for this course, eight of whom are physicians (one of these a health officer). It is planned to send a list of these technicians to the secretary of the various county medical societies in the state for the convenience of the physicians of North Carolina who may have need of this information.

During this year radio talks and many illustrated lectures on venereal disease control have been given throughout the state. The expansion of this program has more than doubled the number of requests for this type of service. Two motion picture films on syphilis have been obtained and are in constant use by the Director of the division and the Acting Venereal Disease Consultant in illustrated lecture work.

In addition to the activities herein reported this division has carried on the usual routine of daily, weekly, monthly and yearly reports and tabulations of communicable diseases, and the handling of a greatly increased volume of correspondence.

Division of Laboratory of Hygiene

For the State Laboratory of Hygiene the most interesting event of the year was the sale of $160,000.00 worth of Revenue Bonds, authorized by the 1937 General Assembly for the purpose of providing the laboratory with a new plant. This, together with additional funds which may be vailable to the laboratory will provide a central building on Caswell Square, adjacent to the present State Board of Health Building. At this central laboratory examinations of specimens from patients will be made and biologics will be standardized, tested for sterility, and made ready for distribution.

A laboratory farm has been purchased five miles west of the city of Raleigh on U. S. Highways Nos. 1, 64, and 70. On the farm will be constructed horse barns, operating rooms and small animal houses. Here preliminary preparation of biologics will be carried on. It is hoped that most of the small animals needed by the laboratory can be produced on this farm and that the larger portion of the feeds needed for all animals can be grown here.

This new Laboratory Plant has been desperately needed for several years. It will make possible an extension in the service of the Laboratory. Since the bonds issued are Revenue Bonds, it will be necessary

that receipts of the laboratory be increased so that there will be sufficient revenue to retire the bonds. As soon as the new plant is completed new products will be available. In the meantime, it has been suggested that the laboratory make a charge for specimen containers. Since approximately 350,000 of these specimen containers are distributed each year, a charge of from five to ten cents for each container would yield sufficient revenue to provide adequate debt service. It is proposed that the laboratory charge only the actual cost of the specimen container. Since from 25 to 30 per cent of these containers are not used for the purpose of sending specimens to the State Laboratory of Hygiene, there is considerable justification for charging actual cost for them.

One of the most perplexing problems of the laboratory during the past year has been the making of serological tests of specimens sent in to be examined for syphilis. The number of specimens alone seriously overtaxed the facilities of the laboratory. During the year 1937 more than 201,000 specimens were sent for examination. It was necessary to handle these specimens in the same space that was available in 1929, 1930, and 1931, during which period there were less than 75,000 specimens examined per year. To add to the difficulties a shortage of guinea pigs made it difficult to secure a sufficient number to supply the required amount of complement for the Wassermann Test. The price of these animals became so high that for a time the laboratory was spending $35.00 per day for guinea pigs which were used for this purpose alone. It finally became impossible for the laboratory to secure a sufficient number of guinea pigs. It was, therefore, necessary to discontinue the Wassermann Test as a routine procedure and the Kline Precipitin Test was made the routine test. All specimens now received at the laboratory are first examined by the Kline Method and those specimens giving a positive or doubtful reaction are then subjected to the Wassermann Test. The Kline Test is considerably more sensitive than our Wassermann. In the 1937 serodiagnostic study our Wassermann was positive in only 58.6 per cent of the specimens taken from patients with syphilis, whereas, the Kline Test was positive in 84 per cent of the same specimens.

Physicians are frequently confused when serological tests disagree. Most of these disagreements, however, occur in late or treated syphilis. In primary syphilis we should have Darkfield Examinations of Chancre Serum. Suitable specimen containers for Chancre Serum make possible delayed Darkfield Examinations which are dependable and which are available to every physician within the boundaries of the state. Although the collection of satisfactory specimens of Chancre Serum is a tedious and painstaking procedure, it does not require exceptional skill. Any physician can secure a suitable specimen. In secondary syphilis practically all serological procedure will give positive results in 100 per cent of the specimens. Therefore, most of the disagreements among serological

tests will be found in patients who have had some treatment or in late or latent syphilis.

The standards set-up by the Advisory Committee of the United States Public Health Service are that acceptable tests be positive in 66 2/3 per cent of the patients with syphilis and that not more than one per cent positive reactions be secured on specimens from normal healthy indivdiuals.

It should be remembered that falsely positive reactions are frequently obtained from patients with other diseases. All tests included in the 1935 serodiagnostic study gave falsely positive reactions in patients with malaria. Some tests gave as high as 20 per cent falsely positive reactions in patients with this disease. Tuberculosis frequently gives positive reactions. Twelve or thirteen tests in the 1935 Study gave positive reactions in persons who had tuberculosis and who presumably did not have syphilis. Falsely positive reactions in this condition varied from 2 to 5 per cent. Numerous other pathological conditions apparently have caused positive reactions in persons who did not have syphilis. The laboratory does not make a diagnosis. It only supplies evidence which may be helpful to the physician in this procedure.

It is encouraging to note that blood cultures are being used more and more in the diagnosis of typhoid fever. This procedure is one of the most useful laboratory aids to diagnosis. It will be positive in the early stages of the disease when typhoid bacilli are not leaving the host in the feces and urine. A positive blood culture will generally make possible the inauguration of typhoid precautions in time to prevent secondary cases. It is, therefore, urged that suitable specimens from all patients that are suspected of having typhoid fever be submitted to the laboratory for culture.

The work of the laboratory has continued to grow by leaps and bounds. Practically all activities have increased. The only exception to this statement applied to the examination of animal heads for rabies. During 1937 only 1,151 heads were sent to the laboratory for examination. This is a smaller number than has occurred since 1932. Of these only 336 showed evidence of rabies. These data furnish additional evidence that rabies occurs in epidemic waves and that we are now approaching the bottom of the wave of incidence. It is probable that this disease will continue to decrease in prevalence for at least another year. If we can judge the future by the past, the year 1940 will witness the beginning of another wave in the cycle of rabies.

At the present the laboratory facilities of the state are inadequate to meet the needs of our public health program. It is highly desirable that competent local laboratories be available. It is our hope that we can encourage the development of local laboratories and that we can assist in improving the quality of their service. It would seem that the demand for laboratory service will always be in excess of our ability to supply it.

We should therefore, use our laboratories intelligently and make every effort to conserve these facilities. If we are to get the best work from our laboratories, we must not send to them specimens, the examination of which can reveal no useful information. In this field of endeavor, as in others, we need quality more than quantity.

Division of Industrial Hygiene

During the past year this division has continued its investigations of the industrial dust problem in the state. This has consisted of both engineering and medical studies in those operations involving a siliceous dust hazard.

The medical phase of the work has been carried on by means of a trailer unit equipped with office space and X-ray. Approximately 3,000 pre-employment, routine, and re-examinations have been made for operations scattered over the state. The examination includes an occupational and medical history, general physical examinations, fluoroscopic examination, and at least a single X-ray film of the chest. The findings in each case were studied carefully to determine the worker's physical fitness for employment in dusty trades, and recommendations were made accordingly to the employer. Where some physical impairment needing medical attention was found, the worker was referred to his doctor.

During the year some 360 samples of atmospheric dust were collected for particle counts and 27 for particle size determination in 28 different operations. A number of samples were also collected for petrographic analyses.

The department has recently issued a lengthy report of a study of the foundry industry in the state, including medical findings on 680 employees and the engineering data representing 157 dust counts in 24 foundries. This report also includes recommendations for controlling the dust in those departments where the concentration is apparently too high. Studies now in progress are the granite quarrying and cutting industry and the pyrophyllite mining and milling industry.

It is gratifying to note that in many dusty operations control measures have already been instituted, and it is hoped that the findings of this department will have some influence on further progress in this direction, which, after all, is the ultimate aim in the control of occupational diseases.

Miscellaneous work of the department has included five radio talks, five papers, two articles for the *Health Bulletin,* preparation of exhibits for the National Tuberculosis Association meeting, for the state-wide Safety Conference, and for the Board of Health Building.

Division of Oral Hygiene

The Mouth Health Education Program of the Division of Oral Hygiene continues to be one of the most popular of our activities. With the aid of outside appropriations we have been able to do more this year than we have in any previous year. However, the demand for the work is greater than we are able to supply and, for that reason, we will necessarily have to have an increased appropriation to take care of the state's part of the expense. This is necessary to meet the present demands and indications are that there will be more counties desiring this service during the next school year than made applications during the year which is now closing.

As you know the purpose of the Division of Oral Hygiene is to teach the value of a healthy mouth. This is done through didactic and demonstrative teaching.

In our didactic teaching we use visual means of instruction. Little Jack's puppet show is one of the best means that we have found. The puppet show will play to about 150,000 children this year

In the classrooms, school auditoriums, Parent-Teacher Associations, and Civic Clubs over 3,000 lectures have been delivered by members of the staff to approximately 200,000 children and adults.

One of the greatest accomplishments of the Division of Oral Hygiene this past year is the follow-up educational material which is used by the dentists in their classroom teaching. We would not forget to mention the newspaper releases which are prepared on mimeographed sheets and sent to the schools to be incorporated in their mimeographed school papers. These releases go into the homes of 30,000 families twice a month during the school year. They are proving to be very popular, and the letters of appreciation which we receive are gratifying.

In our demonstrative teaching the necessary dental work is done for the underprivileged children who are under thirteen years of age. This does not reach all of this group by any means, but the services are rendered for as many as funds and time will allow. The value of this work is demonstrating itself in such a manner now that it accounts for the increased demand for the service.

Those who are able to pay for their children's dental work are notified through the United States mail that their children need dental attention and that we suggest that they consult their own dentists. In a school of about four hundred children a check was made the other day. We found that practically fifty per cent of the entire group had visited their own dentists during the year. The school was not made up of wealthy children but of good average North Carolina children.

Concrete evidence of the lasting benefits of mouth health education was furnished by a check-up which was made in one of the counties this year. Some individual blanks were sent back to the county for the school

dentist who had worked for these children and filled in these blanks several years ago to re-check the conditions of their mouths and also their school records. In practically every case where the dental corrections had been made and diseased tonsils removed there was decided improvement in the child's physical condition. In most cases those who had had to repeat their grades had not had to repeat any more.

Division of Vital Statistics

The Division of Vital Statistics has registered approximately 118,000 birth, death and stillbirth certificates during 1937. Much routine clerical work is necessarily required to secure the completion or correction of unsatisfactory certificates. All certificates are finally systematically arranged, bound and indexed in such fashion that they may be easily located.

Monthly and annual tabulations are made and the findings published. In order to do this routine work, both interpretive and clerical, the Vital Statistics Division has to handle more than 38,000 letters, cards, blanks, certificates, transcripts to Washington, and special reports each month. Part of this service is made possible through funds which are now being obtained from the Federal Government for registration purposes. Furthermore, the Federal Government supplies us with notification of birth registration certificates and permits their being franked to the parents of every child born in North Carolina upon receipt of a birth certificate. Such blanks are highly prized by the parents and are useful in proving the date and place of birth, and parentage.

As indicated by death registration, North Carolina had less serious illness in 1937 than in 1936. The Division of Vital Statistics recorded 34,100 deaths in 1937 compared to 35,580 in 1936. This represented 9.8 deaths for every 1,000 estimated population in 1937 compared with 10.3 deaths per 1,000 population during 1936. In round numbers there were 1,500 fewer deaths from all causes. Improvment was shown in the number of deaths from measles, whooping cough, diphtheria and pellagra. There were 300 fewer deaths from influenza and 200 less from tuberculosis; there were 100 fewer maternal deaths, but approximately the same number of infant deaths. However, when the larger number of births is taken into consideration, the infant death rate declined from 68.4 to 64.9 and maternal mortality from 7.0 to 5.4 per 1,000 live births. In 1937 there were 80,644 live births, approximately 4,000 more than for 1936. This is over twice as many births as deaths and would indicate in general a healthy growing population.

The work of the Division of Vital Statistics has increased immensely during the past two years. Especially is this true in respect to the number of certified copies of birth and death certificates and the number of verifications issued. This increase is due in part to the need for establishing age for admission to school and for use in connection with

securing Social Security benefits for blind and dependent children, and for the aged.

The Division of Vital Statistics contemplates making more statistical studies and interpretations for the use of the State and local health departments. In order to accomplish this some additional equipment has been obtained and an extra clerk employed.

Division of Sanitary Engineering

Increased interest in health work multiplies the pressure for additional service from the Division of Sanitary Engineering. New and additional water works and sewerage plants increase the work and responsibilities of this division. Similarly, every new swimming pool, pasteurizing plant, oyster shucking house, crabmeat plant, school sewerage plant, or water works makes its original demands for review of plans, often a visit to the site, modification, and final approval of plans for the structure. Thereafter, there is the ever-increasing problem of proper maintenance and operation of the plant. New and enlarged local health departments demand new and enlarged assistance and coöperation.

1. *Milk Sanitation.* During the past year this division supervised and assisted in making over 3,800 inspections of dairies and milk plants. Plans were made, modified, and approved for 74 pasteurizing plants and dairies throughout the State. North Carolina now has 149 Public Health Service Milk Ordinance towns. That is more than any other state in the Union, with the possible exception of Texas. Furthermore, 65 of these towns are now making 90 per cent or more on the sanitary rating of their milk supplies. This represents more honor roll towns than any other state. The per capita consumption of milk increases as the quality of milk improves. Last year the per capita milk consumption increased over 10 per cent.

2. *Water Works and Sewerage.* During the year ending March 31, the major municipal water and sewerage improvements under construction with PWA, WPA, or private financing were as follows:

	No. of Plants or Systems	Approximate Population of Towns Served
Water purification plants	7	94,953
New water systems	15	12,490
New sewerage systems	17	12,720
Sewage treatment plants	18	56,137

The total population of the State now served with public water supplies is over one million, according to the 1930 census. This is approximately one-third the population of the State. The population served with public sewerage systems is only a little less than that served with public water supplies. Every new water or sewage treatment plant

means additional calls for service, additional assistance with operation problems, additional inspections of plants, and additional personnel to be trained and supervised.

In this connection, two schools were held for the training of operators, superintendents, engineers, and chemists who are in charge of water purification plants and sewage treatment works. Under the direction of Dr. H. G. Baity of the Public Health School, the first Sewage Works' Operators Short School in the southeast was conducted at Chapel Hill this winter. This school was highly successful. The 1938 Water Works School, held at N. C. State College and sponsored by the North Carolina League of Municipalities and this Board, was by far the best Water Works Short School ever conducted, particularly since actual laboratory instruction was given in chemistry and bacteriology. It is felt that through these two schools the State Board of Health is able to afford very valuable training to men in charge of plants, training which could not be supplied in any other way. The Sanitarians' School-Conference, conducted at N. C. State College, was a valuable means of inspiration and training for the local and district sanitarians throughout the State.

3. *Stream Pollution.* With our increasing population, a still greater increase in the use of water-carried sewerage, and a much greater increase in industrial wastes, the problem of stream pollution is becoming more pressing. Stream pollution in North Carolina is recognized as one of our greatest problems by the National Resource Committee. The coming of pulp and paper mills to North Carolina has created new problems in the Chowan and Roanoke rivers affecting our shellfish industry and damaging or destroying a valuable fishing industry at Plymouth. At least two more large paper companies are known to be interested in establishing similar plants, one in the eastern part and one in the western part of the State. To effectually solve these problems of stream pollution and industrial waste treatment, additional sanitary engineers and laboratory facilities are imperative.

4. *Community Sanitation.* Gratifying progress has been made in community sanitation, with nearly 30,000 privies built during the year, and a total of 130,699 privies constructed since the start of CWA. The quality of work done has greatly improved; the quality score of approximately 72 per cent one year ago has risen to 90.3 per cent. This improvement is an indication of the increased number of concrete slab type privies built and units painted. At the present time 1,200 WPA workers in 62 counties are building about 2,500 units a month.

5. *Malaria Control.* The malaria control program for the past year has been conducted in forty counties, affording full or partial protection from the malaria-carrying mosquito to approximately 300,000 people. A total of 261.6 miles of new canals and lateral ditches were constructed, with an average of 1,369 WPA workers, 104 CCC young men, and 30

men furnished by the sponsors. Forty-five miles of major canals were constructed with 9 dredges. The total water surface of swamps, ponds, and canals drained equals 5,073 acres. With the aid of blood slide surveys made by the Division of Epidemilogy, the projects were carried out where malaria was found to be most prevalent, and where the largest number of people would be affected.

Ditch lining with concrete and stone, which have not been used in this program before, has been started and new projects are being prepared to cover this type of construction, since it is more permanent. One exhibit ditch lining job has been completed, and several more are to be built to show the public this type of malaria control work.

6. *School Sanitation.* The field work on a State-wide survey of school sanitation has been finished. An analysis of this material reveals that although improvement has been made within the last five years, school sanitation in the State is still at a low ebb. It is felt that the lack of adequate instruction in hygiene and sanitation, and the actual lack of proper facilities and satisfactory maintenance and cleaning of these facilities are in some considerable measure responsible for the present incidence of filth diseases in the State. Definite steps should be taken to replace the present divided responsibility by centralizing the authority and responsibility for school structures and school sanitation in a manner similar to that which has been so successful with our highway system and our prison system, and with our school system as far as school operation goes. If the responsibility for the sanitation and the physical school plants could be placed with some one board or commission, it is believed the results would be equally successful.

The work of the Division of Sanitary Engineering is quite varied. As more local health units develop, more demands are made on this division for additional routine service. In addition to the need of more men and means to cope with ever-increasing routine duties, there are new problems, such as stream pollution control, industrial waste treatment, and air conditioning that must be met, and must be adequately met. To do this we cannot stand still. We must advance to keep abreast of an ever-changing modern world of sanitary engineering.

Chairman Craig: Gentlemen, you have heard your Secretary's report. Are there any corrections or questions?

Dr. Paul A. Yoder (Winston-Salem): Mr. President, I should like to make a motion before action is taken on this report, that the State Health Officer be requested to express suitable thanks to the Smith Reynolds Foundation for its generous contribution to the anti-syphilis fight in this state of funds to carry on that work, and express the thanks of this body to the Smith Reynolds Foundation, if that is in order.

The motion was duly seconded by Dr. R. L. Wall, Winston-Salem.

Chairman Craig: Is there any discussion of this motion?

Dr. Reynolds: Gentlemen, the Secretary doesn't need that reminder, but I think it would be much more appreciated by the trustees if a committee from this body were appointed to draft that resolution, instead of delegating it to the Secretary of the Board.

Dr. Yoder: Mr. President, I will accept the amendment to this motion, that a committee be appointed to draft a suitable expression of thanks to the Smith Reynolds Foundation.

Chairman Craig: A committee of how many?

Dr. Yoder: Three.

Dr. Wall: I accept the amendment.

Dr. Frank V. Taylor (Charlotte): I would just like to say this: That I have heard these reports now for twenty-three years, except for one year when I was in the army. I think this is the best news and the finest report from a state health officer that has ever been brought before this body since I have been a member of the Society. (Applause.)

Chairman Craig: There is a motion before the house. All in favor of this motion signify by saying, "Aye"; opposed, "No." It is carried unanimously.

I will appoint on this committee Dr. Yoder, Dr. Manning of Chapel Hill, and Dr. McCain.

Somebody calls my attention to the fact that we did not vote on accepting Dr. Reynold's report.

A motion to accept the report was duly made and seconded.

Chairman Craig: Is there any discussion? All in favor signify by saying, "Aye"; opposed, "No." The motion is carried.

Is there any further fusiness? If not, a motion to adjourn is in order.

A motion to adjourn was duly made, seconded, put to a vote and carried.

The session thereupon adjourned at 1:00 o'clock.

THIRD GENERAL SESSION
WEDNESDAY AFTERNOON
May 4, 1938

The meeting convened at 5:35 o'clock, President Johnson presiding.

President Johnson: The first thing we have before us is the report of the Nominating Committee. I will ask our Secretary to read it.

Secretary-Treasurer Long: Mr. President, the officers elected for this year, as nominated by the Committee and confirmed by the House of Delegates, are:

Dr. William Allan of Charlotte, President-Elect.

Dr. Claude Williams of Elizabeth City, First Vice President.

Dr. M. D. Hill of Raleigh, Second Vice President.

State Board of Nurse Examiners: Dr. T. C. Johnson of Lumberton.

There were no delegates to be elected this year to the American Medical Association. The alternates are elected annually, and Dr. T. W. M. Long and Dr. Wingate M. Johnson were elected as alternates.

Delegates to the Virginia Medical Society: Dr. F. H. Gariss, Dr. W. G. Suiter, Dr. B. M. Nicholson, Dr. Paul F. Whitaker.

Delegates to the South Carolina Medical Society: Dr. L. N. Glenn, Dr. John Q. Myers, and Dr. W. B. James.

Medical Society Foundation: Dr. Martin L. Stevens.

Obituary: Dr. Frederick Taylor, Chairman; Dr. J. F. Abel, and Dr. Ben Lawrence.

Legislation: Dr. Hubert B. Haywood, Chairman; Dr. Donnell B. Cobb, and Dr. George L. Carrington.

Moore County Medical Society Medal: Dr. J. S. Milliken, Chairman; Dr. Thurman D. Kitchin, and Dr. I. H. Manning.

Hospitals: Dr. W. D. James, Chairman; Dr. J. B. Whittington, and Dr. W. I. Wooten.

Cancer: Dr. H. B. Ivey, Chairman; Dr. C. C. Carpenter, and Dr. Thomas L. Lee.

Public Relations: Dr. D. W. Holt, Chairman; Dr. T. W. M. Long, and Dr. P. P. McCain.

Advisory to the Industrial Commission: Dr. Battle A. Hocutt, Chairman; Dr. J. F. Highsmith, and Dr. W. G. Suiter.

Finance: Dr. Vance Peery, Chairman; Dr. Westbrook Murphy, and Dr. W. M. Coppridge.

Printing: Dr. T. W. Long, Chairman; Dr. B. C. Willis, and Dr. E. C. Judd.

Post Graduate Medical Study: Dr. Paul H. Ringer, Chairman; Dr. James W. Vernon, and Dr. William H. Smith.

Advisory Committee on Maternity and Infancy, Children's Bureau: Dr. W. C. Davison.

Syphilis Control: Dr. J. C. Knox, Chairman; Dr. Louis C. Skinner, and Dr. Hamilton W. McKay.

Advisory to the Women's Auxiliary: Dr. V. S. Caviness, Chairman; Dr. W. T. Rainey, and Dr. I. T. Mann.

Social Security: Dr. Forest M. Houser, Chairman; Dr. T. W. M. Long, Dr. Paul H. Ringer, Dr. W. C. Bostic, Dr. T. G. Upchurch, Dr. B. J. Lawrence, Dr. Paul F. Whitaker, Dr. M. P. Whichard, Dr. D. W. Holt, Dr. George L. Carrington, Dr. Thomas L. Carter.

To Study Third and Fourth Year Medical School: Dr. C. F. Strosnider, Chairman; Dr. Ben J. Lawrence, Dr. James W. Vernon, Dr. K. B. Pace, Dr. T. W. M. Long, Dr. Hubert B. Haywood, Dr. W. D. James, Dr. C. C. Carpenter, and Dr. William deB. MacNider

Place of meeting—cruise to Bermuda.

That was confirmed by the House of Delegates, Mr. President, and there remains no old business or unfinished business.

President Johnson: Is there any new business to come up?

Dr. Frederick Taylor: Mr. President, I fear that it will be very unlikely that I will be able to go on that cruise to Bermuda. Therefore, I think a chairman of the Obituary Committee should be appointed who can function and be there. I offer my resignation at this time. Of course, if I can go, I will be glad to do it, but I think it is very unlikely.

President Johnson: I hope you won't have to resign, but if you do, your successor will be appointed by the incoming President.

Dr. Taylor: I had better resign now, because I won't be able to tell you any more about it until next year, and somebody has to get to work on that right now.

President Johnson: We will leave it to the incoming President to appoint a successor to you.

Is there any other new business?

Dr. Paul A. Yoder (Winston-Salem): Mr. President, there is a matter I want to bring before the Medical Society. As President of the North Carolina Tuberculosis Association, I was requested to report to the Medical Society an action which the Board of Directors of the North Carolina Tuberculous Association took at a meeting here yesterday.

The Tuberculosis Association feels that some concrete memorial to Dr. McBrayer should be erected at some place in the state. They want to cöoperate, of course, with the State Medical Society in this memorial, and as a beginning, the Tuberculosis Association passed a motion to appoint a committee from the Association to coöperate with a committee from the Medical Society, if the Medical Society sees fit to go into it, to lay plans and begin to collect funds to provide for the erection of a suitable memorial to Dr. McBrayer.

To start it off, the Tuberculosis Association appropriated $100 to be used in the preliminary expenses of getting this program under way. Their idea, of course, is to see how much money can be collected, and then have the joint committee of these two bodies, to whom Dr. McBrayer gave so freely of his life for twenty-five or thirty years, to erect a suitable memorial to him. I was directed to bring that action before this body, to see what the pleasure of this body was in that matter.

I move you, sir, that the State Medical Society coöperate with the Tuberculosis Association in this matter and that a committee be appointed to investigate the possibilities and confer. A committee of seven was appointed by the Tuberculosis Association, and a committee of the same number should be appointed by the Society, to see what can be done in getting the preliminary work under way.

The motion was seconded by Dr. John B. Wright of Raleigh.

President Johnson: Is there any discussion? If not, all in favor of this motion to appoint a committee from our Society to coöperate with the committee from the Tuberculosis Association let it be known by saying "Aye"; opposed, "No." It is unanimously carried.

Is there any other new business?

If not, I will ask Past President J. F. Highsmith to escort the incoming President, Dr. J. Buren Sidbury, to the Chair. I regret that Dr. Allan, the President-Elect, is not here. He is attending a meeting of the American Association of Physicians.

Dr. Sidbury was escorted to the rostrum by Dr. Highsmith. (Applause.)

President Johnson: Dr. Sidbury, in turning this gavel over to you, I want to tell you that I am turning over to you the leadership of the finest body of men in North Carolina and in the world, as far as I know. (Applause.) I hope that you will enjoy your contacts with them as much as I have. (Applause.)

In the words of Tom Long, whenever he closes a telephone conversation, "Good-bye and God bless you." (Laughter and applause.)

President Sidbury: Members of the Medical Society of the State of North Carolina: I agree with Dr. Johnson, that there is no higher tribute that could be paid to one of our members than the tribute which you have paid me today. I feel that the medical profession of North Carolina is not surpassed by that of any state in the Union. I say that not egotistically, but I think our population of medical men is a cosmopolitan population. It comes from every medical school in the country, and therefore from the best medical schools that can be produced. I want to tell you that I appreciate this honor which is the highest that can be conferred.

I also realize that it carries with it many responsibilities, and I feel that it could not be carried on without the coöperation of the medical profession. I wish to say now, and will say throughout, that you are not electing a dictator. I expect to call upon our Executive Committee to decide upon the affairs of state which pertain to the welfare of the Medical Society, and I pledge you my humble efforts to do all that I can to coöperate, and as best we can, approach the magnificent record which our outgoing President has given us.

I thank you from the bottom of my heart. (Applause.)

Secretary-Treasurer Long: Mr. President, there is no further business before the Society. A motion to adjourn sine die is in order, unless you have something that you wish to bring to the Society.

President Sidbury: At the House of Delegates meeting last Monday night, it was decided to appoint a committee to study the possibility and to bring back recommendations at our next meeting as to whether or not the Transactions should be carried on as they have been, or

whether a medical journal, published by the Medical Society of North Carolina, should take its place, not totally, but the plans to be worked out.

I now wish to name the personnel of that Committee, and this will be my first official act, which I feel is a most important act: Dr. P. P. McCain, Sanatorium, Chairman; Dr. R. B. McKnight, Charlotte; Dr. Paul Ringer, Asheville; Dr. C. F. Strosnider, Goldsboro; and Dr. J. M. Northington of Charlotte, who was appointed on that committee at the meeting when the resolution was passed.

Is there any other business to come before the Society? If not, a motion to adjourn is in order.

Dr. Yoder: I move we adjourn.

The motion was seconded by Dr. W. Houston Moore of Wilmington.

President Sidbury: The Society stands adjourned.

The meeting thereupon adjourned at 5:50 o'clock.

REPORT OF STATE BOARD OF MEDICAL EXAMINERS

B. J. Lawrence, M.D., F.A.C.S.
Secretary and Treasurer

The present Board of Medical Examiners was elected at the Winston-Salem meeting in 1932. It was composed of the following: Dr. F. Webb Griffith, Asheville; Dr. Hamilton W. McKay, Charlotte; Dr. Wm. H. Smith, Goldsboro; Dr. K. G. Averitt, Cedar Fork; Dr. Ben. F. Royal, Morehead City; Dr. James W. Vernon, Morganton; and Dr. Ben J. Lawrence, Raleigh. Dr. Averitt passed away in 1935 and at the December meeting at the Carolina Hotel in 1935, Dr. Roscoe D. McMillan was elected to membership on the Board to fill Dr. Averitt's unexpired term. Dr. K. G. Averitt of Cedar Fork being our Senior member in point of years, was elected as our first President. Dr. William H. Smith of Goldsboro served as our second president, Dr. Ben F. Royal of Morehead City served as our third president, Dr. F. Webb Griffith of Asheville became our fourth president, Dr. Hamilton W. McKay of Charlotte became our fifth president, and Dr. James W. Vernon of Morganton our sixth and present president. Dr. Ben. J. Lawrence was elected Secretary and Treasurer for the six-year term. It is customary for the Secretary and Treasurer who is the executive officer of the Board when the Board is not in session, to serve for a six year term. It is the custom for the Senior member of the Board to become its first President and the next Senior its second President, and so on through the other six members of the Board. Therefore, each member of the Board serves one year as President, except the Secretary. Dr. Roscoe D. McMillan who succeeded Dr. Averitt therefore could not succeed to the presidency since Dr. Averitt had already served his term. Consequently, the Board elected Dr. McMillan Vice President at its December meet-

ing. It is customary for the Board to send the Secretary and the President of the Board to Chicago each February to represent the Board at a meeting of the Council on American Medical Education. That meeting is made up largely of three groups of people. (1) The Council from the American Medical Association; (2) The Association of Deans of the American Medical Schools and; (3) The Federation of State Boards of Medical Examiners. Usually, there is a very large attendance of people interested in medical education and in the care of sick people from all over the United States and often from foreign States. There is usually a representation from the larger hospitals of the country.

Our Board has had a very pleasant and harmonious membership. We have not always agreed, to be sure. Each man seemed to feel and rightfully so, his individual responsibility, and often the debates and the discussion over matters of policy waxed warm. Indeed, under such conditions each and every member of this Board maintained his position forcibly and vigorously, and in the course of debates the various members would seek no quarter and give none. In spite of this, however, when the vote had been taken and the majority opinion prevailed, the other and minority members always yielded readily and the majority opinion became the will of the Board.

This Board considers itself very fortunate that it has been able to license every single candidate who has applied by examination. We have had to decline a good many applications for endorsement of credentials from other states and abroad. In fact, a very large number of would be applicants had to be discouraged by the Secretary because of utterly unsatisfactory qualifications.

From June 1937 to June 1938, 149 men were licensed in North Carolina. Of this number 82 were licensed by examination and 67 by reciprocity. Of the 149 receiving licenses—97 gave North Carolina as their native State, and 52 gave other states as their native home. Let it be said here as a matter of record, that the pressure from doctors outside North Carolina who want to come into this State is increasing daily. The standard of excellency set by the previous Boards of Examiners in North Carolina has been very high and this Board has attempted to maintain that record. We have not been privileged to grant all the requests that have come to us. Some of them from eminent people in positions of trust and responsibility, but when such requests have been declined, it was in an effort to maintain a high standard of scholarship and professional training and in order to give the people of this commonwealth the finest possible group of practicing physicians. It is the impression of this Board that the training given medical students today in the A-grade schools of the United States is of a very high degree of excellence. We feel that the most of those poorly prepared individuals have been eliminated by the medical schools during the vigorous years of intensive drilling of the students. Therefore, when any doubt has

arisen (and it has seldom arisen) we have resolved the doubt in favor of the applicant.

We have a just pride in the honor which the State Medical Society conferred on us when it placed its trust in us and entrusted the responsibilities of its Board of Examiners to our membership for a six year period. We have not accomplished all that we wish we had, but we have tried to act in the light of the best knowledge and information before us. We are proud of the membership of the new Board which is to succeed us. We firmly believe that they will continue to maintain that same degree of excellence and scholarship which has been set by those able men who have gone before us.

This present Board will hold its last and final regular session of examinations at the Sir Walter Hotel here in Raleigh on June 13 with President James W. Vernon of Morganton presiding, and will continue through the morning of the 17th. The new Board of Examiners will be our guests at this time. Candidates for endorsement of their credentials will be reviewed on the morning of the 13th. Registration of candidates for examination will take place during the afternoon of June 13 and again Wednesday morning of the 15th for those men who have previously completed their first two years and who for satisfactory reasons could not be present on the afternoon of the 13th. After the examinations have been finished on the morning of the 17th, the papers will be graded by the individual members of the Board and their grades compiled and averaged by the Secretary. When this work has been completed, the Board will again meet in its last and final session to review the work of the Secretary and to issue licenses to the successful candidates. Following that meeting and when the Secretary's work has been completed, and the names of the successful candidates placed on the register of the regularly registered and licensed physicians in this State, the duties and responsibilities of this Board will terminate and our group will transfer the work to our distinguished successors who were elected at the Pinehurst meeting. The new Board is composed of the following: Dr. Karl B. Pace of Greenville, Dr. Wm. D. James of Hamlet, Dr. J. Street Brewer of Roseboro, Dr. William M. Coppridge of Durham, Dr. Frank A. Sharpe of Greensboro, Dr. Lester A. Crowell, Jr., of Lincolnton, and Dr. Lewis W. Elias of Asheville. The following is a list of the examinations given by the various members of the Board at its June meeting in Raleigh in 1937:

EXAMINATION IN SURGERY
N. C. STATE BOARD OF MEDICAL EXAMINERS

Sir Walter Hotel, June 1937

B. J. Lawrence, M.D., F.A.C.S.

1. (a) How would you treat a fracture of the lower end of the humerus?
   (b) Name extra precautions necessary.

2. Outline briefly the management—including the treatment of—toxic goitre.
3. Describe and *very briefly* outline the management of an early or acutely infected extremity—
   finger
   hand or foot.
4. (a) What is the most common cause of abdominal pain?
   (b) What is the treatment for this condition?
5. What are the four or five most important measures to be observed in the handling of any fracture?
   Answer: 1.
   2.
   3.
   4.
   5.
6. (a) How would you diagnose a perforated gastric ulcer?
   (b) What would be your treatment?

Take any Five but Only Five Questions.

EXAMINATION ON PATHOLOGY, BACTERIOLOGY AND HISTOLOGY
N. C. STATE BOARD OF MEDICAL EXAMINERS

Sir Walter Hotel, Raleigh, N. C.

June 1937

By Dr. Ben F. Royal

1. Describe the sequellae of cicatrization of acute inflammatory disease of the
   1. Peritoneum.
   2. Pericardium.
   3. Endocardium.
2. Name 3 acid-fast bacteria. Give staining technic in detail. Where is each likely to be found?
3. Give the blood picture in a case of
   1. Pernicious anemia.
   2. Splenomedullary leukemia.
   3. Uncinariasis.
4. Given a specimen of urine of high color, "smoky," Sp. Gr. 1.030, Albumin—3 plus, "mixed" casts, no sugar. Describe the
   1. gross
   2. microscopic anatomy of the kidney excreting it.
5. Enumerate the conditions causing enlargement of the heart and, in one condition, describe the method by which the enlargement is brought about.

6. Discuss in not over one page what you think can and should be done to curb venereal disease in this state.

Answer Any Five Questions.

EXAMINATION ON ANATOMY AND EMBRYOLOGY
N. C. STATE BOARD OF MEDICAL EXAMINERS

June 1937

Hamilton W. McKay, M.D., *Examiner*

I. A. Give a general classification of bones.
   B. Illustrate (I prefer drawing).
II. What structures separate the surfaces of the femur and tibia?
III. A. Name three (3) abdominal muscles.
   B. Show by diagram the one which surgeons frequently use as a landmark.
IV. A. Write about six lines describing the coronary arteries.
   B. What arteries supply the bladder in the male?
V. A. Locate the fissure of Sylvius. (Drawing).
   B. What artery is contained in this fissure?
VI. Give the origin and distribution of the eleventh cranial nerve.
VII. A. Locate the illeo-cecal valve.
   B. Briefly describe. (Drawing.)
VIII. Give very brief gross description of the thyroid gland. (I suggest an index drawing. Do not write over one-half paragraph.)
IX. Name three (3) ducts that empty into the male urethra.
X. Write one-half paragraph setting forth gross description of the Eustachian tubes.

Extra

I. A. Name the two types of white blood cells.
   B. To which type do lymphocytes belong?
II. Enumerate four (4) important changes in the circulation at birth.

Note: Answer only ten (10) questions. Applicants will be graded on interpretation of the question, their ability to briefly express themselves and neatness.

PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS
N. C. STATE BOARD OF MEDICAL EXAMINERS

Sir Walter Hotel, Raleigh, June 1937

Roscoe D. McMillan, M.D., *Examiner*
Red Springs, North Carolina

1. *Digitalis:* (a) To what pharmacologic action of digitalis do you attribute its beneficial effect in heart disease? (b) Mention one type of

cardiac disorder in which digitalis has been shown to be especially useful. (c) What is supposed to be its action in that instance? (d) Explain the nausea and emesis resulting from the use of digitalis.

2. Compare the diuretic action of potassium acetate, theophylline and salyrgan. Give dose of each for an adult.

3. Outline the management of a patient with severe hyperthyroidism.

4. Name the essential parts of a prescription. (a) Write a complete prescription using either metric or apothecary terms for twenty-four doses of potassium bromide, using suitable vehicle. (b) Write a prescription for an ointment containing 10 per cent sulphur. (Do not sign name.)

5. State the source of theelin. Explain its action.

6. *Quinine:* (a) State source. (b) Name a satisfactory preparation and give dosage in the treatment of an adult with tertian malaria. (c) How soon may the effect of its action be expected? (d) What is the first evidence of toxic action? (e) In what form of heart disease is a derivative of this drug sometimes employed? (f) Give adult dosage of this derivative and its method of operation.

7. Give the dose and state the early symptoms of beginning intoxication by tincture of nux vomica, carbon tetrachloride, yellow iodide of mercury and potassium iodide.

8. Suggest a drug or drugs that may be used in relieving the pain due to (a) Presence of foreign body in the cornea. (b) Intestinal spasm. (c) Hyperchlorhydria. (d) Arterial spasm. (e) Bronchial cough. Explain the action of each drug.

9. Name the alkaloids of ergot and explain the action of ergot on the intestine, blood vessels and uterus.

10. *Opium:* (a) Give source, name three preparations and two of its alkaloids. (b) What is the reason for using the alkaloids? (c) What is the relative analgesic action of its alkaloids? (d) What is the effect on the respiratory center? (e) What is the effect on spinal reflexes? (f) How does it relieve diarrhea, (g) How does it relieve dyspnea? (h) How does it facilitate anæsthesia?

PHYSIOLOGY, CHEMISTRY, HYGIENE
N. C. STATE BOARD OF MEDICAL EXAMINERS
1937

By James W. Vernon, M.D.
Morganton, N. C.

Answer any ten questions:

1. Discuss the physiological function of the autonomic nervous system.
2. Describe the physiological movements of the large intestine.
3. What are the factors controlling the flow of lymph?
4. Name five (5) physiological characteristics of the myocardium.

5. Discuss gastric analysis.
6. Give a test for blood in the urine.
7. State briefly the chemistry of acidosis.
8. Name the enzymes involved in the gastric and intestinal digestion of proteins.
9. Define: fermentation; putrefaction; isotonic solution.
10. Name the most common congenital infection and discuss its prevention.
11. Define vital statistics and discuss their value briefly
12. Discuss the U. S. Public Health program for the prevention and control of syphilis.
13. Discuss the emotional and mental factors in the prevention and control of physical disease.

EXAMINATION IN GYNECOLOGY AND OBSTETRICS N. C. STATE BOARD OF MEDICAL EXAMINERS

Sir Walter Hotel, June 1937

By F. Webb Griffith, M.D.

1. Give care of child for first 24 hours after birth.
2. How would you make a diagnosis of dead fœtus in last two months of pregnancy?
3. What is effect of maternal syphilis upon the pregnancy and upon the child?
4. Give indications for and method of performing episiotomy.
5. Give indications for use of forceps.
6. A woman, age 40, states that off and on for about two months she has had slight vaginal bleeding, which amounts to just enough to soil a pad. What would you do about it?
7. Give symptoms and pathology of acute gonorrhea.
8. Give symptoms and differential diagnosis of myomata uteri.
9. Give treatment of amenorrhea.
10. Give gross and microscopic anatomy of cervix.

EXAMINATION IN MEDICINE AND PEDIATRICS N. C. STATE BOARD OF MEDICAL EXAMINERS

Sir Walter Hotel, June 1937

By Wm. H. Smith, M.D.

1. Given a patient with a 4 plus Wassermann and other signs of syphilis who after four months of intensive treatment has a disappearance of all signs and whose Wassermann is negative. What advice would you give about further treatment?
2. A year-old baby who has been well develops in a few hours all or

several of the following conditions—fever, slight diarrhea, abdominal pains, nausea and vomiting. Name five (5) conditions as the cause.

3. Write briefly your idea as to the cause of essential hypertension.

4. Give the treatment of Vincent's (fuso-spirochetal) infection of the mouth.

5. Give briefly the signs and symptoms of delirium tremens and outline the treatment.

SECTION ON GENERAL PRACTICE OF MEDICINE AND SURGERY

TUESDAY AFTERNOON

May 3, 1938

The Section on General Practice of Medicine and Surgery of the Medical Society of the State of North Carolina convened at 2:20 p.m., in the ballroom, The Carolina, Pinehurst, Dr. W. J. Lackey, presiding as chairman.

Chairman Lackey: We will now open this session on the General Practice of Medicine and Surgery, and I would like to say in the beginning that I am certainly proud to be chairman of this section. It was organized for the benefit of the general practitioner and for the State Medical Society as well. I think it is serving its purpose in both ways. I do say that there has been a lot of work that had to be done in getting this section organized and I want to personally thank all of the officers of the State Medical Society. Each one that we have called on has helped in every way that he could. Dr. J. M. Northington of Charlotte served as Secretary, and I am sure the section couldn't have been started if it had not been for him. He, as always, has been interested in the general practitioner and he certainly deserves more credit for this section than I do. I wish Dr. Northington would stand up.

Dr. Northington stood up. (Applause.)

Chairman Lackey: He certainly has put out a lot of time as Secretary.

Dr. Johnson's paper, "The Importance of Little Things in the Practice of Medicine," will be the first on the program. (Applause.)

Dr. Wingate M. Johnson of Winston-Salem presented his prepared paper. (Applause.)

SOME IMPORTANT LITTLE THINGS IN MEDICINE

Wingate M. Johnson, M.D.
Winston-Salem, N. C.

First of all, let me express my gratification at the birth of this new section. Being a general practitioner myself, one of the chief ambitions

with which I assumed the leadership of the North Carolina medical profession was that the State Society might come to mean more to the general practitioner, and *vice versa.* Fortune smiled upon this hope when this section was organized. I hope and believe it will become one of the most popular and useful sections of the Society.

I appreciate, also, the honor of an invitation to talk to you in this first meeting. In choosing a subject I have tried to be practical rather than profound. I sincerely trust that no one will think I am "talking down" to this group if I try to tell some of the little things that I have found helpful during the thirty years of my professional life. This sort of paper must necessarily be sketchy, and much of it is elementary—but if, as a sort of older brother, I can help some of you one-tenth as much as my seniors have helped me, I shall be well repaid.

It is, of course, not necessary to argue the importance of little things. A cinder smaller than a pinhead under one's eyelid, until it is removed becomes the most important thing in the world. A dull hypodermic needle may lose the practice of a family. By the same token, a few moments used in warming one's hands, or a keen, small-caliber needle may win a patient, and a family. Furthermore, patients seldom come singly, but, like sorrows, in battalions.

To get some order into my remarks, let us begin with some important little things in diagnosis. The *history* is of supreme importance. Those who have heard Dr. Walker Alvarez will recall how he stressed the value of a careful history. While the doctor, like a skillful cross-examiner, must guide the conversation to some extent until the ground is covered, the patient should not be interrupted too often. Valuable deductions may be drawn from the patient's own idea of the relative importance of symptoms. A carefully taken history helps inspire the patient's confidence by making him feel that the doctor is really interested.

In making the *physical examination,* it is important to cultivate the habit of going over the patient systematically, taking one part of the body after another, and concluding with the necessary laboratory work. By so doing, one is not likely to overlook anything, and the care used still further increases the patient's confidence. The order used will vary with different doctors, but the chief point is to follow one plan regularly, so that the habit is formed of exploring the whole body at the first examination.

It is hardly necessary to stress the importance of *inspection.* The character of the respiration is noted—whether easy or labored; the patient's color—pale, flushed, or cyanosed; the throbbing of the neck vessels or the heaving impulse of the heart's apex beat; whether there is any eruption. Many times in doubtful cases typhoid fever may be ruled out by the presence of labial herpes—a sign first taught me as an intern by Dr. David Riesman.

Palpation, of course, should be done gently, with well warmed hands, and the habit formed of going over the body systematically. A little trick taught by the late J. C. da Costa is worth remembering: by placing the right hand over the left and pressing upon the finger tips of the lower by the upper fingers their touch is more sensitive than when one hand is used alone.

In *percussion* it is not necessary to remind you to have the chest as symmetrical as possible, and to remember that a light stroke usually tells more than a heavy one.

As to *auscultation,* the best bit of advice I know is to get a stethoscope that fits your ears, use it often, and stick to it. I once saw the late Dr. L. E. Holt fail to recognize a frank lobar pneumonia with a borrowed stethoscope. And of course every one knows that in incipient tuberculosis rales can often be heard only after a preliminary cough.

In examining a child, I would like to suggest doing every thing possible while he is asleep, if so fortunate as to catch him thus. Almost always the mother wants to wake him at once, but it is much more satisfactory to count the respirations and pulse, to listen to the heart and lungs and to palpate the abdomen during slumber. By having warm hands and using great gentleness it is possible to palpate the abdomen much more satisfactorily while the little one sleeps.

Let me pause here to pay my respects to the one who first perpetrated that ages-old teaching, "it is just as easy to examine the chest of a child crying, for the respirations are deeper." The first man who wrote that must have been doing some armchair theorizing. Surely nobody could have thought it easy who ever tried to hold a stethoscope on the chest of a squirming, squalling infant, and to interpret the inspiratory sounds with ears still deafened by the ear-splitting expirations. In examining the chest of an infant or small child, a small bell on the stethoscope is much more satisfactory than the regular adult size.

Enlarged glands can be palpated, the ears examined, and the axillary temperature taken before waking the child to look at the throat. This examination is best saved for the last, whether the child is asleep or awake, for it is usually resisted more and frightens the child more than any other part of the examination. If he is old enough to coöperate, it is often possible to get a satisfactory view of the throat by the simple method of having the child say "aah" while facing a good light or, usually better, by using a small flash light. It goes without saying, that the examination of a child is not complete without a good view of the throat, no matter how obtained.

Before leaving the subject of the sleeping child, let me say that occasionally a child can be anesthesized without breaking its slumber. I have succeeded a number of times with chloroform, and once with ether. This is made easier, if the child has previously had an opiate, as for

example, paregoric for the pain of an earache. Incidentally, avertin is one of the greatest advances made in anesthesia.

In diagnosis, clinical findings, to my mind, considerably outweigh laboratory work; but this does not mean that the laboratory is not important. Because the general practitioner is preëminently a clinician, it is easy for him to forget or minimize his laboratory training. I feel, however, that every doctor who does not have easy access to a good public laboratory should have a small room or corner of his office fitted up with a microscope, a blood-counting apparatus, glass sides, test-tubes, a Bunsen burner or alcohol lamp, and the few stains and chemical reagents necessary for the tests often necessary to confirm a clinical diagnosis. Wassermann tubes, of course, are to be had for the asking from the State Laboratory, and should be used often. A high school graduate without any hospital training at all can be taught to do routine chemical and microscopic urinalyses and other simple tests. My eleven-year-old son, who aspires to be a doctor, has learned to make a total leukocyte count that tallies almost exactly with the hospital technician's, and to recognize polynuclear leukocytes, lymphocytes, and malarial parasites.

I realize keenly how hard-pressed we all are, and that there are only 24 hours in a day—but it does not take long to make a blood count, and a patient's life may be at stake. With the increasing importance of the anemias, and with the sinister power that most valuable drug sulphanilamid has of occasionally destroying both red and white cells, it is almost essential that a general practitioner who aspires to be up to date should be able to make blood counts. I am old enough to know that almost every man in this group had to learn the essentials of laboratory technique before he began practice; and also old enough to urge you to refresh your memories in technique you may have forgotten.

A very important and not-so-little point to remember is never to give a laxative and rarely an opiate when abdominal pain is present until its cause is determined. It has been well said that morphine in abdominal pain puts both the patient and the physician to sleep. There are still too many cases of ruptured appendicitis in the land.

In *treatment* there are a few important trifles I would like to mention. One was suggested in my introduction; the technique of hypodermic medication. One of the most valuable investments I know of is a plentiful supply of sharp hypodermic needles of rustless steel. Of all makes I have found the Vim most satisfactory, and in the long run the cheapest. One Vim needle will outlast several ordinary needles. I use far more of the 27 gauge than any other size, even for intravenous medication. By encircling the upper arm with the thumb and fingers of the left hand, the tissues are pushed into a cushion. If the needle is quickly plunged directly into this cushion at right angles to the skin surface, the injection is almost if not quite painless. This method was taught me by one of

the best general practitioners I ever knew—the late Dr. D. N. Dalton. To a trained nurse I am indebted for a very simple way of preparing a hypodermic injection. A pledget of cotton wet with alcohol makes an excellent alcohol lamp. The hypodermic needle to be sterilized is placed in a teaspoonful of water, with the butt end of the needle presenting at the distal end of the spoon. This is boiled over the burning alcohol-soaked pledget of cotton. The boiling water is then sucked into the syringe, virtually sterilizing it. Enough water is kept in the syringe to dissolve a hypodermic tablet dropped into the spoon. The water is kept moving between the spoon and the syringe until it is cool enough and the tablet is dissolved, when the needle is picked up by the tip of the syringe and the hub tightened with the finger and thumb.

While on the subject of the hypodermic, the weekly bulletin of the Mayo Clinic Staff—a most useful publication to be had for the asking—gave a valuable tip recently. When rapid action from morphine or atrophine—or both combined—is desired, the solution may be given intravenously, dissolving ⅙ grain in 1½ c.c. of water or ¼ grain in 2 c.c. In a few such emergencies as renal or biliary colic and severe coronary occlusion, I have found this method quite effective.

Another little thing I have found useful is that milk is the most humane salt-free diet available. In numerous patients swollen with edema and with greatly reduced urinary output I have found that a diet of milk and fruit juice alone greatly increased the output of urine and reduced the edema.

Just now much is being written and said about the various forms of anemia and their treatment. I can't vouch for the orthodoxy of the following rule, but can testify that it usually works: when the number of red blood cells is low, liver is indicated; when the hemoglobin is low, but the red cells within normal limits, iron is needed. In other words, liver forms red cells, iron stuffs them. When both red cells and hemoglobin are reduced both liver and iron are needed. Liver extract is most effective if given in concentrated form intramuscularly at intervals of a few days to a month or more. Lilly's Reticulogen (½ c.c. dose) is most concentrated, Lederle's next (1 c.c.). The Council of Pharmacy of the A.M.A. is preparing, as no doubt you have noted, to standardize the various preparations of liver as a check upon their claims. Iron is best given by mouth in one of the numerous forms now on the market. For children, Elixir Feosol is palatable and satisfactory.

In all forms of anemia the hydrochloric acid of the stomach is usually low or absent. For some reason, iron is assimilated much more readily when HCL is given along with it. The most palatable way to give hydrochloric acid is to mix it with a small glassful of tomato juice. Unless told otherwise, the average patient will think he has been served a tomato juice cocktail. It also blends well with buttermilk, grapefruit, pineapple, or orange juice.

Doubtless most of you have been presented by the manufacturers with several Benzedrine inhalers. Besides being effective in shrinking the nasal mucosa, its quick action in raising the blood pressure and its pungent smell combine to make it very effective in reviving a fainting person. It is well to remember, also, that its too-frequent use may cause insomnia. I have been told that many bus drivers carry these inhalers in their pockets to use when they have "an exposition of sleep come upon" them.

The so-called cyclic vomiting in children, or almost any sort of vomiting without diarrhea, can usually be controlled satisfactorily by the rectal use of sodium bromide in a few ounces of warm water. At least twice the oral dose should be used, and repeated in an hour if necessary.

One of the most important things for us doctors to remember is to consider our patients' pocketbooks when we prescribe for them. This is especially true now that the 1938 recurrence of the 1930 depression is not proving much more fragrant under the new name "recession." In the *Journal* of the A.M.A. for March 19, Bernard Fantus had an excellent article entitled "Economy in Medication," in which he made the very practical point that "The difficulty a doctor finds in collecting bills may sometimes be due to the fact that the patient's family, after paying for expensive medicines, may have nothing left with which to pay the doctor." Undoubtedly most of us are influenced too much by the detail men in our choice of drugs. Dr. Fantus points out some of our chief extravagances. Chloral hydrate is not only the cheapest but the most effective hypnotic we have, yet others costing from five to forty times as much are used much oftener. Acetanilid in small doses is a safe and efficient anti-neuralgic; yet others far more popular cost seven to 145 times more. Bichloride of mercury is quite effective as a skin disinfectant; yet other preparations now displacing it cost up to 2.125 times as much. Another extravagance is the use of proprietary drugs with patented names. For example, luminal costs $6.90 an ounce; the same drug, pheno-barbital, $.61. The firm of Bayer still reaps a harvest from the "genuine Bayer aspirin," which retails for nearly six times the market value of acetyl-salicylic acid.

Finally, may I suggest that it may seem a little thing to attend regularly the meetings of your county, district, and state societies, to take advantage of such post-graduate courses as were provided for 600 men in our state last year, and to attend occasionally a meeting of the A.M.A. or Southern Medical. Such investments of time, however, will pay enormous dividends in the enhancement of one's medical self-respect and in enabling one to keep up with medical progress. I am sure that most medical men will agree that they seldom, if ever, attend a medical meeting without learning something that made them feel repaid for going. Osler has well said that the medical society "helps to keep a man 'up to the times', and enables him to refurnish his mental shop with the

latest wares. . . . It keeps his mind open and receptive, and counteracts that tendency to premature senility which is apt to overtake a man who lives in a routine."

Dr. J. M. Northington (Charlotte): Mr. Chairman, I had a notion that probably that dignity that is hedged about a throne would keep the President's paper from being discussed.

I can heartily approve of what our President has told us. I agree that chloral hydrate is probably the best of the hypnotics, but I know of one instance in which I believe the use of chloral accounted for a tragedy. It is a little more difficult to pick up several tablets or capsules and swallow them in succession than to empty a vial of solution of chloral into your mouth and swallow it, and I know of one instance in which that occurred. That would probably be a minor objection to the substitution of chloral for the hypnotics that are taken in capsules, but it would have value. I happened to be the doctor who prescribed the chloral in this case and highly tooted it.

The various points that Dr. Johnson has brought out are worthy of emphasis, and particularly the matter of carelessness in the use of dull hypodermic needles. You can not only lose a patient by subjecting him to unnecessary pain by the use of rusty hypodermic needles, but you can easily lose a patient in another way—by not keeping the hypodermic needle patent, and finding in the middle of the night when you have been called that you cannot get the solution through the needle. Still another thing to be taken into the situation is the frequent practice of using inferior needles, not only to the humiliation of the attending physician but sometimes these accidents go to the courts with unfortunate results for the practitioner.

I think this first meeting of this Section is to be congratulated on having the President with us; not only does it give us tone but he has given us information.

Dr. F. R. Taylor (High Point): Gentlemen, I am sorry I came in late. The matter of hypodermic needles is one which interests me. I once had a man come to me some years ago and he wanted to sell me a platinum needle that would be good for a life time.

I said: "Have you no care for the poor patient?"

He said: "What do you mean?"

I said: "How would you like to have the same needle shot in you for five years?"

I prefer a cheap steel needle and carry plenty of them. When they begin to get dull, throw them away and forget them. Another point I find useful is this: embarrassment is completely obviated by carrying a spare syringe.

Another thing about economy. It is a strange thing that some of us seem to feel that if we have a patient with pernicious anemia who is much handicapped financially that we must give him the liver extract ourselves

because, of course, it is cheaper even with the medical charge. Some people would rather die by pernicious anemia than to take some forms by mouth. We give our patients a hypodermic syringe and put a drug in their hands that is mainly insulin and yet we don't put liver extract in their hands as a rule. Why shouldn't we give to our patient of limited financial resources a hypodermic syringe and a prescription and teach him to give it to himself. It will save a lot of money and it is a thing he has got to use throughout his life. I don't think there ever will be a case of death through an overdose of liver extract. (Applause.)

Dr. Wingate M. Johnson (Winston-Salem): I just want to say this: as for the dignity of the hedge of the throne, it reminds me of one night when we were at school and wanted to make a bonfire. Old Doc Tom was janitor there and he came out and found the boys burning his wood.

He said: "Gen'man, is I one of the faculty or is I one of the boys?"

So I want to say this afternoon, I is just one of the boys. (Laughter and applause.)

Chairman Lackey: The next paper is by Dr. E. B. Lattimore, of Shelby, on "Signs and Symptoms of Pneumonia with Special Reference to the Diagnosis of the Different Types." (Applause.)

Dr. E. B. Lattimore: When I got my copy of the program I was amazed to find there had been tacked on to my subject: "With Special Reference to the Diagnosis of the Different Types."

I am like the girl who said when she first went out to play golf that she didn't know which end of the caddy to take hold of. That is the way I am about this subject.

Dr. Lattimore presented his prepared paper. (Applause.)

SYMPTOMS AND DIAGNOSIS OF LOBAR PNEUMONIA

E. B. Lattimore, M.D., Shelby, N. C.

In attempting to present a paper to this society on the subject of Pneumonia I do so with a full conviction of my unworthiness to discuss the subject in a manner that its importance demands. Nor do I try to discuss it on account of any special knowledge of the subject or for the purpose of advocating any theory as to the etiology or specific treatment. On account of its widespread prevalence and its great mortality it is in my opinion a subject of the greatest importance. The medical profession has since its earliest history recognized the disease, and men of the greatest ability have studied it with extreme care and still the mortality is little changed in spite of the many methods of treatment advocated and pursued. I shall not discuss the etiology of the disease for I am sure that there are many causes that produce it and the pneumococcus is simply an incident and not the cause. Recently the Duke Medical school conducted a laboratory course of instruction in pneumonia typing. This course was offered free to technicians, office assistants, etc, and lasted one week and

was attended by more than sixty technicians. There are said to be thirty-two types of pneumonia and there has been found a serum effective in a number of types but not all at the present time. This movement is one of the greatest efforts the State Board of Health has made in a long time and much good will result therefrom. At this time its use is not practical in country practice and the cost is prohibitive in most cases. Still we have a hope that in the near future these obstacles will be removed and the typing and treatment can be universally resorted to. I shall not attempt to deal with the varieties but will only mention the form most frequently met with in our daily work, hence my subject "Symptoms and Diagnosis of Lobar Pneumonia."

As a rule the onset is abrupt. The character of the attack that is to follow is often suggested by the manner of the beginning. A rapid onset with a marked chill, pain in the side, and a high temperature often leads to a sthenic attack, prominent symptoms, sudden termination by crisis with prompt resolution. On the other hand a gradual beginning with rather uncertain symptoms and a lower fever is often followed by a protracted course, differvesence by lysis, lingering consolidation or untoward sequelæ. Generally speaking, the stage of invasion is characteristic. A well-marked chill is promptly followed by a rise in temperature, cough, pain, and dyspnoea. The chill is often severe, lasting from one to several hours. The patient feels very cold, shakes all over the body, with teeth chattering, cyanosed lips, and cold extremities. This is soon followed by overheating. The cheeks are flushed, in a majority of cases on the side corresponding to the lesion. The head aches and throbs severely. The skin is suffused with a ruddy glow, feels dry and burning to the touch. The patient becomes thirsty, the eyes glisten, and an expression of anxiety appears. Pain is very common at the outset, generally taking the form of a stitch in the side which is more severe during cough or deep inspiration. Other pains sometimes present are earache, abdominal pains, headache and tonsillitis. The pulse is rapid from the beginning, varying with the temperature. Under the finger it feels full and bounding which is the reason for almost universal venesection in pneumonia many years ago. The tense feeling of the radial pulse does not always mean a hypertension as in a majority of cases the blood pressure is low. Examination of the heart itself, aside from the increased rate may reveal nothing abnormal although during the latter part of the attack we usually find functional murmurs. The breathing in pneumonia is characteristic. We are often able to make an absolute diagnosis from this alone. The respirations are short and shallow, restricted both voluntarily and involuntarily and accompanied by movements of the nasal alae. The expiratory grunt is a sign of importance especially in children and it may occur although there is no pain. The respiratory rate has no significance as to the gravity of the condition, because when pain is a prominent symptom the count is more rapid and the patient is in less danger than when the count is lower and the patient is cyanotic. Dyspnoea is a prominent feature but is rarely

dangerous per se unless there is a profuse bronchial catarrh or oedema of the lungs. Cough is practically always present and it has been stated that it is "rarely useful, always troublesome, and sometimes dangerous." It begins soon after the chill and lasts throughout the attack. A sudden cessation of the cough is an unfavorable symptom, sometimes a harbinger of exhaustion, stupor, or coma. At first the sputum is scanty, frothy, and white or faintly streaked with blood. In the course of a few hours it becomes rusty or brick dust in color as a result of an increased uniform mixture with blood. The amount is small, sometimes absent with children who swallow it. The posture assumed by pneumonia patients varies. The most common position is on the back but I have seen many patients who prefer to lie on the affected side as motion is restricted and there is less pain on inspiration. Perspiration may occur at any time during the attack but is most common during or after the crisis. The urine is usually decreased about fifty per cent in quantity, is highly colored and raised in specific gravity with burning pain during micturition. Leucocytosis is a marked feature of the disease but does not invariably occur. The increase is in the earliest stages and persists throughout the continuance of the fever. This increase in white cells disappears at the time of the crisis or may begin a few hours earlier than its occurrence. When deffervescence is by lysis the decline of the leucocytosis is more gradual. The number of white cells may vary from normal to 35,000 or more. One case has been reported in which the count was 94,600. The absence of leucocytosis indicates an unfavorable prognosis in all but the mildest cases. The red blood cells show a slight decrease.

Of the atypical types of pneumonia, I will take time to mention central pneumonia often encountered, especially in children. There is an incomplete consolidation which has begun in the deeper parts of the lungs. Here the patient has all the appearance of pneumonia but an examination of the chest reveals nothing for the first few days. Later a diagnosis is easy. The termination in over fifty per cent of cases is by crisis and a majority of these occur on the seventh day in spite of the popular belief that it must run nine days. Crisis is more apt to occur in children than in adults and more often in young adults than in the aged and still more often in the severe brief cases than in the more protracted cases. The temperature will drop in a few hours from 104 or 106 below the normal and remain there for several hours or even days. Pseudo-crisis is a condition in which there is a rapid fall in temperature closely resembling the termination but which is followed in from a few to twenty four hours by a rise to or above the original height. This is often disappointing as it is yet likely to run a complete course. I believe cases often called relapse or recurrence are those in which we have had a pseudo-crisis. The condition of the pulse at this stage is of great prognostic value. If the rate comes down with the temperature the outcome is favorable but if you have a rate of 120 or 130 which increases as the

temperature drops it is necessary to resort to heroic treatment immediately. As to the physical signs, percussion and auscultation give the most information. During the early stages a hollow tympanic note is met which becomes dull as the disease progresses and where there is marked consolidation the note may even become flat, this occurring more frequently where there is a pleural exudate. If I were to name what I consider the most reliable sign, I believe I would say that crepitant rales is the most characteristic as it is always elictited early except in central pneumonia. They are heard at the end of inspiration and are produced by air breaking through secretions in the bronchioles as it enters the vesicles. They disappear after true tubular breathing sets in. I want to merely name but not discuss some of the more common complications. We have pleurisy, empyema, abcess and gangrene of the lung. Some cardio vascular sequelae, nephritis and albuminuria, are not uncommon. Jaundice is rare but serious and we have also many nervous manifestations. In typical cases probably no disease is more easily diagnosed than lobar pneumonia but atypical types may be confounded with acute pulmonic phthisis or galloping consumption, bronchopneumonia, especially in children, pulmonary congestion and most important of all, pleurisy with effusion. As I have already said the diagnosis of central pneumonia may be in doubt for several days. When dealing with a fever of uncertain origin the lungs should be repeatedly and carefully examined. It is only by exercising extreme vigilance that we can be spared the chagrin and embarrassment of having an unsuspected case of pneumonia brought to our attention by a consulting physician. During an epidemic of influenza like we frequently have, we should be particularly on our guard not only because the disease is frequently complicated with pneumonia, but also because when the two infections go hand in hand the clinical picture is apt to be very atypical. Doubt as to pleurisy and abscess can be settled by resort to exploratory puncture and x-ray. As to prognosis, many things are to be taken into consideration. In any large number of cases I believe a mortality of 20 per cent will not be far wrong. The death rate is higher in the very young and in patients who have passed sixty-five years of age. Various complications affect the mortality very decidedly. It is much greater when you have such complications as endocarditis, pleurisy with effusion, and empyema. It is lower in those who have had one or more previous attacks. The site and extent of the lesion also affect the death rate, being greater the more lobes there are affected, also, being greater if the upper lobes are affected more than the lower lobes. If five lobes are involved the mortality is one hundred per cent. Extremes of temperature are also to be feared. Low temperature indicates a lack of reactive power on the part of the patient, while hyperpyrexia often goes with a toxaemia which is overwhelming. In the negro race the death rate is two or three times higher than in whites. This is partly due to the poor

medical attention they get as well as improper food. Statistics as to Negroes includes mulattoes and this will make the mortality seem higher as mulattoes do not have the power of resistance as whites and full blooded negroes. Alcoholism plays a prominent part in the prognosis as well as being a predisposing cause. Moderate drinkers have a higher death rate than total abstainers, and habitual drunkards with double pneumonia have a slim chance of recovery. They nearly all die.

Dr. Norman Fox (Guilford College): Mr. Chairman, I will say I enjoyed the paper very much, and I think he covered it especially well. He mentioned there the outstanding value of the two physical signs that you find in percussion and auscultation, which is very true.

There are two things I would like to mention which may not have occurred to him. I think, in the general inspection of the patient, if we strip the patient to the waist one of the first things that will perhaps catch our eye is the limitation of respiration on the side involved. I think that is especially true in the acute lobar form of pneumonia. It may not be so noticeable in the lobular form.

The other thing I would like to mention is in the facial expression of the patient, which Dr. Lattimore may or may not have brought out. There is the question of apprehension or fear or wakefulness which I think is very characteristic. (Applause.)

Dr. C. F. Strosnider (Goldsboro): Mr. Chairman, I enjoyed the talk and I would like to discuss one type of pneumonia which is very difficult to diagnose. It occurs frequently in children between three and twelve years of age. The thing that makes it difficult to diagnose is that the respirations are not increased and that the temperature runs from 103 to 106 in about twelve to twenty out of twenty-four hours. Nausea and vomiting is very pronounced. You suspect malaria. You suspect pyelitis. The patient many times does not give a history of having had colds. The respirations of the first four or five days are around 25 a minute. The pulse, however, is up. The child prefers and insists on lying on its back. The first thing that leads you to believe that you have a pneumonia is that the child complains of abdominal pains. If the pneumonia is on the right side, many times there is a rigidity. If it is on the left side you have similar symptoms. Another symptom that is rather typical is that the patient complains of a pain in the thigh or the knee. There is nothing found in the chest stethoscope. The thing that leads you first to pneumonia is that you have a leukocyte count of 18,000 and then a hacking cough develops along about the fifth day. The diagnosis is made with an X-ray. When it comes out where you can discover it with your stethoscope, your pneumonia is practically at an end. You have what the doctor calls a pseudocrisis. The temperature drops to sub-normal at 97 and then after about 14 hours it rises again to 102. Another thing will be the intense chill. Autopsy will show—numbers of them have done it—

a pronounced thickening and congestioning around the larger bronchial tube. This is the type of peribronchial pneumonia. (Applause.)

Dr. Seavy Highsmith (Fayetteville): Mr. Chairman, I had no thought of discussing this paper. However, there is one symptom in pneumonias, particularly where you have a severe autotoxemia, and that is a symptom simulating intestinal obstruction that occurs quite frequently in children and there is often a fine point in diagnosis of the intestinal trouble. I think you will find it in a study of the histories of pneumonias in children. Now, in pneumonias of any type, providing the patient is well and in good physical condition, we expect them to survive the attack with the proper nursing and medical attention. In children following diseases, such as whooping cough, particularly in children under twelve years old, it is a serious problem. Then, too, in elderly people we have here a serious problem. Recently I had, within the last two weeks, a case of this type. The man was 79 years of age and had withstood severe sicknesses and accidents. He had had both hips fractured and a fractured skull. His people all thought he had nine lives. He was taken with a pneumonia and had a temperature of 104. His temperature gradually came down and within a week he was free of temperature and fairly comfortable. I was called back again to see him. When he had his first attack it was on his left side. Now he had developed a right-sided pneumonia with a severe pain. He looked like death was immediate, but under hypodermic morphine he picked up and looked better. Twenty-four hours later he began to vomit and the vomit was constant and assumed almost the coffee ground type which you are familiar with. I called in a surgeon and he made the remark that vomit of that type was almost sure to be an intestinal obstruction and advised that we take him to the hospital. We did. The vomit continued even after he had had glucose and all the other things that were required. A week later he died. The vomit was never relieved. We were still in doubt as to what was the cause of the apparent obstruction and we got permission and held an autopsy. At the autopsy there was no evidence of a mechanical obstruction. There was evidence in his lungs of a previous pneumonia which we had a history of, but there was no mechanical obstruction. I just want to stress the point of that symptom of vomiting in pneumonia, particularly in children and elderly persons. (Applause.)

Dr. L. A. Crowell, Sr. (Lincolnton): I haven't practiced real medicine for about twenty years and I wonder whether there has been any improvement made.

One of the things that interests me as a surgeon is this: the differentiation between pneumonia and acute appendicitis. We have a case in the hospital that we are now studying. First of all, any temperature of 104 and a leukocyte count of over 15,000 coming on within the first twenty-four hours isn't appendicitis and 99 times out of 100 it is pneumonia.

Another thing, in making palpitation tests over the abdomen, superficial palpitation gives as much pain as deep palpitation. I think mistakes have been made in going into the abdomen of a pneumonia case. It goes to prove to me that every medical case should be carefully studied, indeed, before you go into the patient. I am afraid there are too many cases in which if a fellow happens to have $100 in his pocket and a pain in his abdomen, somebody is going in there. I think pneumonia has a morning temperature just about as high as the evening temperature, which every other disease does not have. You get a typical case of pneumonia and you will have a temperature running high all the time; and that is a great help in those cases where you can't find consolidation with the stethoscope. (Applause.)

Dr. W. P. Knight (Greensboro): Mr. Chairman, while I was an interne and afterwards, and particularly during the war and before we went across when we saw so many operated on, I followed through all that time the practice of looking up and examining every appendix that I could find that had been removed from a patient who developed pneumonia either the next day or two days later; and I was astonished to find how little evidence of disease those appendices showed. I am convinced that three-fourths of those cases were pneumonia cases at he time of operation.

Dr. R. C. Mitchell (Mt. Airy): Several minutes back in the discussion of this paper I felt that I would have to move on, but I wish to report one case in my experience. A man came into the receiving ward of the pay hospital in an ambulance at about seven-thirty one evening with a temperature of 103, with limitation of inspirational respiration on the right side, and with a flushed right cheek. We thought possibly we had an acute gall-bladder.

We sent for Dr. Clark and he said, "No, he has pneumonia."

He went to the medical side the next morning, and Dr. George said, "He has the beginning of lobar pneumonia."

Another man said, "When you find a man like that you always have trouble in the chest."

Two weeks later I happened to wander up into the surgery clinic and there lay the emaciated man—he had been operated on and a quart of pus emptied, after an attack of appendicitis. Everybody who had seen this man was puzzled and every man who had seen him was wrong. (Applause.)

Dr. F. R. Taylor (High Point): Mr. Chairman: Misery loves company. One of the cases that I suppose will haunt me to my dying day is the son of a professional friend of mine. The doctor came to my office and told me that he believed his boy had appendicitis and he wanted me to go and see him. I found almost the identical picture that Dr. Mitchell tells about. He had very rapid respiration and a very marked flush on his right cheek.

All I said was: "Doctor, I have practiced just about long enough to know that I don't know very much about appendicitis in children."

We took the boy to the hospital. Three surgeons, I think, and an interne saw the boy. He had a little pus in his urine. They decided it was not appendicitis and they thought that it might be something in his kidney. I was undecided between appendicitis and pneumonia on account of that flushed cheek.

His mother said that if they weren't going to operate on him she felt she could take care of him at home. I went to see him the next morning. He was sitting up, beating on his right side, and saying to his father that it didn't hurt. He had a ravenous appetite. He wanted to get up and get out and play. I said that I guessed I was mistaken and I better take my hat off to the surgeon. That boy went that way for eight days—up and around playing with other boys in the neighborhood and playing hard.

Then his father came to my office and said: "My boy has got just the same picture as he had before. I am not going to ask you to come out to see him. I am going to take him to the hospital and ask you to meet with the surgeon there and talk it over."

We did; and very reluctantly the surgeon consented to operate. I have seen that man operate many times. That is the only time I have seen him with the knife poised in his hand and yet hesitate. Finally he plunged in as a sort of act of desperation. He put his hand in and then turned and looked up at the boy's father and said, "Doctor, I am awfully sorry. He has got a great, big walled off appendix abscess."

Now that thing must have ruptured there eight days previous. How he could beat on it and say "Look, Daddy, it doesn't hurt," how he could romp and play, and how he had a ravenous appetite, I have never yet been able to explain.

Worst of all, though, he was drained successfully, then a few days after the operation he developed peritonitis and died in a few minutes.

Dr. E. B. Lattimore (Shelby): Mr. Chairman, I only want to tell Dr. Crowell that we haven't any better treatment than we had when he quit practice a long time ago.

I thank the other men for discussing the paper without ripping me up the back.

Chairman Lackey: The next paper is by Dr. John Q. Myers, of Charlotte, on "The Care of Elderly Patients." (Applause.)

THE CARE OF ELDERLY PATIENTS

John Q. Myers, M.D., Charlotte, N. C.

I am very proud indeed to have been asked to appear on this program in this first meeting of the general practitioners of this section. It is the first time I have appeared before you all in about eleven years now.

I am glad this section has been ogranized and I am glad to have a part in its first program and add, if I may, something to encourage the general practitioner, for the Lord only knows where to find solace from the practitioner who has heard of a specialist referring a patient to the general practitioner. Though I thought for a while that I would be a specialist, even that a doctor had to be a specialist, or call himself a specialist anyhow to get on in his profession and the world and do well, I soon found this was a mistake. So I went back to calling myself what I have been since Dr. John Peter Munroe gave me my diploma in 1904—a family doctor and general practitioner, with a feeling that I owed something to the profession to which I belong.

Our Chairman and others on this section's program will cover the general aspects and other parts of general practice. The idea has come to me to talk about a part of medicine that gives me more and more satisfaction as time goes on—ministering to those of my patients who are past their physical prime in the world of recessions and woes.

Dr. O. H. P. Pepper of Philadelphia in an address in Charlotte early in this year called attention to some important facts in this connection. One of these is that with the great increase in the number of those who get to be old, and the greatly reduced number of births, pediatrics in a way is a dying specialty, while geriatrics is a coming specialty. Of course this means that a much larger part of the work of family doctors is among the elderly, and this proportion will grow larger for a good many years. My dear old mother is living and enjoying life by the sweat of her brow and Biblical promise. I have never seen her purse empty.

Dr. Barney Brooks of Nashville, in the *Tennessee Journal* for April tells us a great many things of interest. We learn that in 1850, of the 23,000,000 in this country, 21,000,000 were under 50; in 1930 the figures were 123,000,000 and 102,000,000. And according to the present trend the 1950 figures will be 138,000,000 and 103,000,000. Stated differently, in 1850 one of every eleven persons in the United States was fifty years old or past; in 1930, one of every six; and in 1950 we may confidently expect one of every four to be past fifty. The figures for sixty-five years and past are: 1850, one of every forty; 1930, one of every twenty; 1950—only twelve years from now—one of every fifteen.

Dr. Brooks tells us that the half-million old men and women of 1850 could be told that they were too old to be operated on, but in 1950 the 12,500,000 will consider themselves too young to be so carelessly dealt

with. And his statement is in agreement with that of Dr. Pepper to our post-graduate class in Charlotte in January, that there is little evidence to support the popular belief that age is a strong contraindication to surgical operation.

A whimsical forecast is made. Obstetricians and pediatricians will certainly have less work to do. Internists can look forward to more and more work with the wearing out processes. Urologists will be much busier, while gynecologists will be increasingly idle. Opthalmologists may look forward to more cataract operations, but the otoLaryngologists will not have nearly enough operations on the nose and ear to compensate for the great falling off in the tonsils harvest. The plastic surgeon will have more epithelioma operations and less for correction of harelip and cleft palate.

Some may be discouraged from giving proper care to old folks by thinking that little can be done for them, that they cannot be cured. I am satisfied that with the exception of directing the bringing up of babies curative medicine has its greatest field among those getting on toward the end. Remember that the word "cura" means care, that to cure means to care for, or in good North Carolina langugae, to take care of. And all doctors', certain all family doctors', chief function is to take care of the health of their patients, their mental and physical health, easing their worries as well as their pains; giving relief from their cares as well as from their coughs; instructing them about their eating, drinking, working, playing and sleeping, as well as by whom and perhaps when and how the cataracts, the uterus, the prostatic obstruction shall be removed, and not allow them to visit a specialist until you know all about their ills.

Most of my old folks have been with me a long time and I know all their health history, including such important parts as disappointed ambitions, thwarted loves, money losses, and skeletons in closets. When one comes under my care for the first time I take a long, leisurely, gossipy history, and find out everything I can about that man's or woman's life, and add to it from time to time. I never get it all the first time, often not the most important part. Any laboratory work that may seem needed I have done, usually no more than a very simple urinalysis.

I don't believe in doing what is called in some hospitals and clinics putting the patient through the mill, or in ordering one into a hospital as a routine. If a patient really needs to go to a hospital, all well and good, but not on the basis that the place for a sick man is in a hospital or that it will be more convenient for me to have him there. A lot of old folks can't sleep in any other bed but their own. Noises are particularly obnoxious to them—and whoever saw a quiet hospital? I built and operated one successfully for seven years.

Old folks are used to exercising considerable authority and except when very gravely ill it is good for them to be at home where they can

wear the crown of power and if happily the old husband or wife be still alive, enjoy his or her company.

It interests me to note how seldom it is that a doctor's death is reported as occurring in a hospital. Unless he dies soon after an automobile accident or a surgical operation he is mighty apt to go to Heaven from his own bed. I noted that the great Wake Forest teacher of biology, Dr. William Louis Poteat, and very recently, the widow of our own Dr. I. W. Faison, died at home—come to think of it, Dr. Faison died at home, too.

Having made a working diagnosis, not only as to what brought the patient to me, but as to his whole state of being, I prescribe and direct, not on the idea: All those things that you don't do, do, and the things that you do do, don't. Unless I am convinced that even what I regard as generally very bad for people is really doing that individual harm I tell him or her to keep on with it. We are very various. How much harm has been done by doctors bleeding "as long as blood will run from the vein," denying fever patients water and food, and—this comes right up to now—denying a person meat because his blood pressure is higher than we think it ought to be?

I saw in the last issue of our *State Medical Journal* that Professor Raymond Pearl of Johns Hopkins says positively that moderate use of alcohol does not shorten life. I am glad to have sound backing for my belief and practice all through the years.

Old men are apt to have hernias, urinary obstruction, locomotor ataxia and cancer of the face, stomach or rectum, and to be concerned about their lack of sexual prowess. With a good many old men sex matters will amount to a mania.

Old women are apt to have resultants of childbearing or of not having borne children. Both are liable to have gall-bladder disease, urinary calculi, cancer of the bladder, Bright's disease, heart disease, diabetes, fibroid phthisis, glaucoma, and cataracts.

These likelihoods should be borne in mind. An old man with a hernia that gives him little discomfort, can be kept reduced and if he is not worried about it it is generally best left alone. Proper prostatic massage and general regimen will enable a good many to escape any kind of operation on the prostate. I have known an old man whose partial urinary obstruction was blamed on the prostate to be relieved by slitting of his very narrow external urinary meatus.

The services of a family doctor in whom the patient and his family have confidence are indispensable in those pitiable cases—by no means uncommon — old men coming to think of nothing but sexual matters, Without such services, rendered understandingly, persons so afflicted can hardly escape confinment.

We owe it to our old patients and ourselves to keep cancer in mind. And we owe it to them to say nothing about what is in our minds until

we have pretty positive evidence. Examine the rectum, sigmoid, breast and cervix yourself and have X-ray examinations made of the stomach on slight suspicion; but don't tell the patient you are examining to see if he or she has cancer. Make the examination to find out what he or she has—to rule in something, not to rule out cancer.

Remember that men have been operated on for gallstones when the symptoms were the pains of locomotor ataxia—and I know of one case in which the reverse mistake was made.

It is in chronic diseases of the old that it is most essential to individualize your management, in which one person with a certain disease should have one treatment, another a quite different treatment, one should have a surgical operation, the other be carried along without operation.

We must not only protect our old patients from the younger folks in the house, but protect the young from the old. Who can tell how many children are infected by an old member of the household whose fibroid phthisis bothers him very little? When it is recognized and accepted that most patients with tuberculosis must be treated at home and that the family doctor can do this reasonably well practically all cases will be traced to their source and just such cases as elderly persons will be shown to have supplied the bacteria in a great number of cases in children.

We should accustom ourselves and teach our patients to think of glaucoma before thinking of cataract as a possible explanation of a case of eye disease, and consider it to be glaucoma until it is proved to be something else. And glaucoma may develop in an eye that already has a cataract.

Taking care of the health of old folks includes protecting them from quacks and from faddists in the regular profession. Some of our patients read about these dangerous persons in the papers. Some get personal letters. Many are told about them by well-meaning friends. The American Medical Association usually has information on advertising quacks and is glad to supply it. Telling patients about the rise and fall of similar fads in medicine will convince most that this particular one is off the same bolt of cloth as those that have been tried and found wanting.

The choice of a nurse suitable for the individual old patient is more difficult than for the general run of patients. And for any patient ability to pay as well as suitability to the case of those to be had should decide whether graduate nurses, practical nurses, or voluntary helpers are to be made use of.

Although a good many who write on the subject do not seem to realize it, death is inescapable. Eternal life, certainly in this world, is not to be aimed at. But life can be prolonged and the family doctor is the man to do it. He is also the man above all others to so direct the late period of life as to add tremendously to human happiness. The family doctor can encourage and supervise his old patients in their recreations and hobbies.

He can protect them against the enthusiasts for exercises and for endocrine therapy. He can take a leaf out of the psychiatrists' book and encourage his patients to come to his office frequently and talk over all their problems and their worries, whether or not he call it mental catharsis.

Such an extensive subject had to be handled in a sketchy way, some general principles and a few specific illustrations. I believe the principles are sound and hope the illustrations will prove helpful.

I am happy to have a part in the first meeting of the most important Section in our State Medical Society. I predict that this Section will be the means of greatly improving the quality of medical and surgical service to all the people of North Carolina.

I can say sincerely of the general practitioners and not feel embarrassed: They are the sign of security for health and happiness to the profession, and should be buried under the flag with the following inscription:

"When freedom from her mountain heights
Unfurled her standard to the air,
She tore the azure robes of night
And set the starts of glory there."

(Applause.)

Dr. G. G. Dixon (Ayden): Mr. Chairman: I can't see why my friend Myers wanted me to discuss the care of an old man. I am not an old man. I don't know how old men feel.

You know, the great King Solomon once was visited by the Queen of Sheba. He asked the Queen of Sheba if she knew what animal it was that began life with four legs, in middle age walked on two, and in old age on three.

She said: "You tottering old fool, it's you. As an infant you crawled, as a young man you stood erect on two legs, and now you totter along with a cane."

As babies go on up through the early stages of life they have the contagious diseases, the effects of which may or may not follow them to the grave. The measles, whooping cough, scarlet fever, and such may leave marks on the heart or kidneys that will have no effect either bad or good until we have passed the meridian and start down the hill. If we go on through early youth and early manhood and womanhood, we have had most of the contagious diseases that we are going to have and we reach the place—and women a little earlier than men—of what is commonly called the change of life and go through a period of anywhere from three to ten years that would discourage the gods if they had to look after them. Men go on further and if they have no recessions or financial depressions or anything to bother them do not have their change of life until they reach 60 or 65. Then they go through that mental change that they know they are getting old; and nobody wants to get old and still

fewer want to die young. Some good doctors get to advising that if he is not going to work, he must get a hobby; because if he does not have something external to occupy his mind his internal condition will occupy it. When he stops work he finds out he can't enjoy the things of his youth and he wonders why and what has happened to him. He begins to examine himself; and there you have a patient who if handled right can be made to pay dividends a long time; who if handled wrong, will go to the quacks and will degenerate very rapidly and cease to pay dividends to the physician or the quacks. Dr. Strecker's lecture this morning, I believe, was intended more for the patient who has reached middle life and is suffering from not a genuine physical disability but who has passed the age of going uphill.

You know, life starts like the sun in the morning and climbs to the meridian at high noon and gradually sinks to the west. When man reaches the meridian and starts going down toward the evening of life, he has gone a long way before he realizes that he is past the meridian. The very minute he realizes he is past the meridian and is on the down grade, that minute he becomes a liability—and unless he is handled carefully, a liability to the physician and to the community. If handled properly, that man can be carried on down the eventide a happy, well-feeling, mentally alert asset to the community. There is not so much in medicine that can be done for him. To give an old patient the stimulating drugs to whip him up and to drive him on ends his life at a considerably earlier date. So if we treat the patient as a disease in a secondary manner, I believe we will have considerably more success and our patients will not only live longer but will live happier. I thank you. (Applause.)

Dr. J. F. Abel (Waynesville): Dr. Myers in his very dynamic and forceful way, as usual, I think gave us a very beneficial and a very striking paper; and I shall start my short discussion by recommending that we all read that carefully when it comes out in the proceedings. I think we take these papers, gentlemen, too lightly. We feel like we are being patient in listening to the paper at the time it is delivered, but a paper that is worthwhile—like some we have been hearing here in this session—is worth being anxious for the proceedings to be out so that you can read it, study it, and try to coördinate the recommendations in your daily experience. I think it was very striking how he brought out and illustrated the age levels, the cause that influences the age level, and the influence of this on the different branches of the practice of medicine. He tells us how the age level would be influenced and so on; but he left out, my friends, I think a very important thing and one that is quite a factor in the practice of medicine and particularly on age level. I think if the activities of the contraceptives continue and grow that by 1950, sir, we won't have anybody under fifty years old. (Laughter.)

I recommend that Dr. Myers rearrange his age level and base it on the influence of that control as to age limit. (Applause.)

Dr. L. A. Crowell, Sr. (Lincolnton): I think age is a relative thing. I saw a fellow the other day about 40 years old and I said: "Why are you walking along like that?"

He said: "You wait until you get as old as I am and you will walk worse than I do." He was probably 40 or 50 years old.

I was in the hospital in Miami, Florida, for three weeks and I didn't have anything else to do but to read—and suffer a little. I read a book by a Chinaman and it was a revelation to me. It was an indication to me that we should have Chinamen send missionaries over here. In China they take care of the old people. They say that a man after he reaches a certain age should not carry a burden across the street and he should be taken home by his sons and should be tucked in and made comfortable.

Now I think along about 50 years of age when a man has a change of life, it is something that taps you on the shoulder and says, "Old Boy, you can't do the things you used to do."

Another thing—you can't make a young man of an old man. I think this gospel ought to be preached to the young men. You wouldn't put kerosene oil in your automobile and expect it to do good service. Still, you put anything and everything in your stomach—you smoke and you drink. Many people are old today because of their own faults.

Another thing that helps to keep a man young is to keep active in the things of life. Keep active and keep at something worth while and you will live to be not only old, but to be efficient in your old age.

I said years ago that I would take a flying machine when I was 65 and I would go up in the air and I hoped it would fall. I have decided to postpone that for the time at least. (Applause.)

Dr. J. W. Odell (Dunn): It took me a long time to get courage enough to attempt to discuss this paper. Sometimes I think we younger doctors have an inclination to sit back and perhaps rob ourselves of a great many things that might help us. This question particularly appeals to me. During my two years of hospital service and ten years in general practice I have cared for a good many patients—or helped them, as the doctor gave us the definition of a cure. And I was really glad of that, for many of them have asked me, "Can you cure me?" I was glad that he defined "cure" in the terms of "care."

While listening to this paper an incident has been strongly brought to my mind. It occurred in this manner—with apologies to the ladies: An old gentleman about sixty-three years of age was brought into the surgical section and was operated on for a double hernia. He reacted favorably and was all right. Just about dusk he disappeared. Nobody could find him. After a while he came limping in. The interne said, "Where in the world have you been?"

He said: "I have been right out there behind those bushes and I calculate to go there every night and every morning." (Laughter.)

So far as medication is concerned, as far as I can see, if the heart is in fairly good shape, the intestinal tract not too nearly past the point of functioning in a proper manner, there is very little that we can do except to stir the aged to a more moderate course in living. Of course, we know that elimination is one of the most important factors in many cases, and as we grow older we will notice it in regard to ourselves. Of course, moderation in diet and exercise is something that can not be too strongly impressed upon you; and above all try to gain their confidence. Sympathy is nothing more nor less than an understanding of what they crave. They will often come in and sit down and I will say, "What can I do for you?" and they will say, "I want you to help these here bad feelings." And those bad feelings are just as real to them as the heat is to us today. It is true you have got to prescribe some kind of medicine or they will go somewhere else. But they should carry away a certain good feeling for you which makes them nod in recognition when you meet them on the street at a later date.

I thank you, gentlemen. (Applause.)

Dr. W. C. Ashworth (Greensboro): There is one point especially I wish to stress, since I take care of a number of senile cases, namely, the danger of advising old people to have a radical change in environment. In a large number of cases instead of helping the patients, they become morbid by introspection and they become real hypochondriacs. Dr. Myers, there is nothing more serious than when a fellow begins to study himself. Ten years ago I used to envy old people sitting around in the Elk's Club or at the hotels with nothing to do. Now when I see a man like that I really pity him. He has my sincere sympathy. Don't advise a radical change in environment unless it is absolutely necessary. (Applause.)

Dr. John Q. Myers (Charlotte): Mr. Chairman, I want to thank the gentlemen who have discussed the paper; and I hope that next year we will have a good, big program for general practitioners. (Applause.)

Chairman Lackey: I have been asked to appoint a committee in connection with the award of the Moore County Medical Society Medal. The function of this committee is to select the best paper from this Section. All of these papers here will be considered and the one selected will be reported to the Chairman of this Section. I understand that doesn't have to be done today. On this committee will be Dr. J. F. Abel of Waynesville, Dr. Seavy Highsmith of Fayetteville, and Dr. J. B. Ray of Leaksville.

I guess at this time it would be a good idea to appoint a nominating committee for the purpose of electing a chairman for this Section for the next year. This nominating committee will be asked to report at the end of this session this afternoon. I nominate on this committee Dr. W. P. Knight of Greensboro, Dr. H. D. Walker of Elizabeth City, and Dr. S. L. Crow.

The next paper on the program is by Dr. H. F. Starr from Greensboro on "Medical Examinations for Life Insurance." (Applause.)

Dr. Starr presented his prepared paper. (Applause.)

MEDICAL EXAMINATIONS FOR LIFE INSURANCE

H. F. Starr, M.D., Greensboro, N. C.

Mr. Chairman and Fellow Members of the Society:

I am mindful of the honor of being asked to speak to you on this occasion, the first meeting of the Section on General Practice of Medicine and Surgery, on the subject of medical examinations for life insurance. It requires no small amount of courage to appear along with so many distinguished men as you have on the program. Perhaps it is a case of where a fool rushes in where angels fear to tread.

At the outset, let it be said that life insurance acknowledges its very great dependency on the medical profession, particularly those members engaged in general practice, and that it is deeply concerned about anything which is adverse to the best interests of organized medicine and the individual physician and his patient.

On the other hand, the medical profession acknowledges benefits from life insurance. Physicians in America receive over $70,000,000 annually in examination fees alone from life insurance. There are no bad debts and no collection expense. Life insurance reduces dependency and poverty among the general population and thereby helps lower morbidity and death rates and lessen the heavy load carried by physicians in treating the indigent. Education of the public in health matters, advocating the health examination, and urging people to coöperate with the physician and use only well qualified and ethical physicians, have all reacted to the benefit of the medical profession.

Life Insurance medicine differs in many respects from clinical medicine. Let us therefore look very briefly at the method of selection of risks as to its bearing on the type of examinations required for life insurance.

Risks are selected by the group or Medico-Actuarial Method which is a result of the blending of the medical and actuarial sciences. It is based on the mortality table and insurance experience and is made practical for every day use by the operation of the law of averages. While it is impossible to forecast the duration of an individual life, it is possible to forecast with a surprising degree of accuracy the average duration of life in large homogeneous groups.

In practice, facts are collected and analyzed concerning the individual. The individual is placed in a group of others similar to himself. Here he loses his identity and is treated as the entire group. To the clinician who of necessity is an individualist first, last and always, this seems unjust, unscientific, and grossly inaccurate. Yet the final results by this method are far more accurate than we could possibly obtain by the clinical prognosis of each individual case based upon personal opinion of even

the most expert in prognosis. By use of insurance experience, which is vast, most applicants can be so classified. In unsual cases where a sufficient amount of insurance experience has not been accumulated, it is necessary to resort to purely clinical appraisal based on individual judgment.

Though life insurance deals with large numbers of individuals in groups for underwriting purposes, it is distinctly individualistic in spirit. Life insurance and its very existence as we know it today is based upon individual forethought, responsibility, and achievement. Its object is to furnish means whereby the individual may provide for his dependents and his old age and not have to depend upon the State. It is not socialism and it is not State Medicine.

In the appraisal of each individual risk eight main factors are always considered, namely

1. Build
2. Race
3. Habitat and environment
4. Occupation
5. Family History
6. Personal History
7. Habits
8. Finances and Insurable Interest

The favorable factors are credited and the unfavorable factors are debited numerically and the final result indicates the expected mortality expressed in percentage of normal for such a group of individuals.

There is another very important factor which is always considered—namely, the reliability of the information at hand. In case of the medical examination, the character, ability, and experience of the physician making the report is an important consideration in the appraisal of the risk.

There are certain qualities necessary to the completely successful medical examiner. The first and most important qualification is character and inherent honesty that makes a man decline the appointment or resign his appointment if he finds it impossible to take care of the work with reasonable promptness, examine each applicant thoroughly, and make unbiased reports and recommendations on friends or strangers alike.

Physicians engaged in General Practice are generally preferred as regular examiners. However, should a satisfactory examiner later specialize, he is not usually discontinued on that account. For special examinations, specialists are employed when available.

In spite of the care which is used in the appointment of examiners, occasional disappointment seems inevitable. While the dishonest examiner is rare, he is a menace to the good name of the profession whose high standards of ethics and conduct are excelled by no other group on earth. His methods are against the interests of honest and conscientious

examiners. Members of the medical profession are beginning to show more and more impatience with tactics used by these few, in fact, some of the leaders of this Society have at different times suggested that it would be a service to the profession to bring some of these tactics into the open.

We have seen reports of lung examinations without removing the coat and vest of the applicant; pulse counts without palpating an artery and without a watch; blood pressure readings without the use of the sphygmomanometer, and normal readings obtained on an individual for the first time in years and unobtainable afterwards; urinalyses without securing specimens, and complete examinations made from the whole cloth without ever seeing the applicant or even knowing him.

Gross misrepresentation of this sort is rare. More often there is just evidence of carelessness, inaccuracy, or undue haste. Scores of consecutive examinations made by the same examiner have all shown uniform pulse rates of 72, blood pressures of 120-80, and specific gravity of urines 1.020. These examinations may have been honestly made and all of the applicants may have been normal and the examiner merely used these figures as a symbol of normal without taking the trouble to give the exact readings. Yet this betrays a trait of inaccuracy and lack of care which is a fatal handicap to a physician and a medical examiner.

In the life insurance examination the personal and family histories are extremely important, as in any other field of medicine. Sometimes this is obtained in such a hurried and mechanical way that it is not only valueless but actually misleading.

Examinations of this sort are not the rule. Most examiners are thoroughly honest and conscientious and, as a rule, their examination are dependable, satisfactory, and a credit to the profession.

Second to character as a qualification for the life insurance medical examiner are training, ability, and experience. Availability to examine applicants promptly is necessary from the business standpoint. Delay often results in loss of a client to the agent whose livelihood depends upon delivery of the policy. Courtesy and tact are also essential. The examiner should keep in mind that he is representing the Company and that the applicant is its valued client and should receive the same consideration as his patients.

This brings us to the question of just what kind of examination for life insurance is expected of the examiner. It would be an impertinence on my part to undertake to tell this gathering composed of so many eminent clinicians how to make a physical examination. There are some suggestions, however, based on a knowledge of the problems involved which I believe will be helpful.

In the first place, the history is extremely important and should be elicited with care. The applicant's answers should be accurately recorded. The examiner must bear in mind that the attitude of the applicant is very different from that of the patient. The applicant is prone to forget,

he minimizes, misleads, and rarely deliberately lies. It requires skill to draw from him the true and complete picture.

The questions on the examination blank are largely of a general nature and serve chiefly as an outline. Obviously it is impossible to ask a question on the blank concerning everything which may have occurred in the applicant's life which might have a bearing on his insurability. It is supposed that the examiner will not only ask the printed questions on the blank, but that he will when necessary question the applicant further in an effort to draw from him a true and complete history in order to determine his insurability just as he would with a patient in order to make a diagnosis.

The examiner should record the essentials of the history given by the applicant regardless of whether he believes it has an important bearing on the risk because in some instances insurance experience shows that relatively minor conditions separately or in conjunction with other impairments have an important effect on the risk. Also, applicants being prone to minimize, may describe pneumonia as a bad cold, or treatment for tuberculosis as overwork. If such facts are omitted, there is no clue to follow up in questionable cases. Investigation of cases in which there is a history of an ordinary health examination reveals that in about 90 per cent the examination revealed some condition important from the insurance standpoint. Failure to fully report the history given by the applicant is unfair to him as it may later appear that he attempted willful misrepresentation which if proved will cause the insurance to be void.

The physical examination should be complete and made in systematic order. Most examiners find the order in the examination blank satisfactory. The general appearance of the applicant as to health and vigor and his apparent age sometimes give us most valuable information. Most examiners prefer to take the temperature, examine the pulse, and take the blood pressure early in the examination in order that later on the pulse and blood pressure may be re-checked if abnormal or if there is suspicion that nervous excitement is the cause of abnormal findings. The height, weight, and measurements give us the basic rating or the starting point from which the risk is appraised and if the applicant is to any considerable degree overweight or underweight, scales should always be used and care should be taken to record the exact figures. The rest of the physical examination is no different from any other complete examination. It should start with the head and end with the feet and include the usual procedures of inspection, palpation, percussion, and auscultation. The examiner is of course expected to use his experience and judgment and determine for himself what steps he must take in order to satisfy himself concerning various questions which may arise on account of any questionable features which may be discovered in the course of the routine examination.

Satisfactory insurance examinations cannot be made in a few minutes. Some, of course, require more time than others. Generally speaking, under the most favorable conditions with an alert, intelligent applicant with the least history and with a very fast examiner, not less than 30 minutes will be required, and occasionally an hour or more. When an agent says that Dr. So-and-So is the best examiner he ever saw because he never takes over 10 minutes for an examination, one begins to wonder.

In certain cases the applicant's family physician alone has information which is necessary to determine insurability. Correspondence with him is at times necessary not solely because of some applicants' tendency to minimize past ailments, but because frequently the applicant actually does not know the diagnosis of the condition for which he was treated and it may be impossible for the examiner to determine the diagnosis from the applicant's statements. Some examiners call the attending physician over the phone, if in the same town, and include his statement in the examination report. Such thoroughness is deeply appreciated. Investigations of this nature are so important in insurance medicine that I believe the clinician will find it helpful to more frequently contact previous attending physicians in obscure and chronic cases.

Legally, the family physician is justified and protected in furnishing information regarding an applicant for life insurance; for on the examination blank the applicant, over his signature, authorizes any physician to disclose to the Company any information acquired while attending him in a professional capacity.

The attending physician is, of course, not compelled to answer inquiries of this nature, but to do so is oftentimes an accommodation to his former patient as it may enable him to secure protection which otherwise might have to be denied him. If the information is of such a nature as to prevent the unscrupulous applicant from perpetrating a fraud, few of us will regret having played a part in bringing about fair play. We recognize that the physician has a right to ask for reimbursement for the time and trouble required in answering these requests and that he has a right to expect that such information will be regarded as confidential and every effort will be made to spare him embarrassment on account of it.

Realizing that there is much in common, life insurance and the medical profession have coöperated splendidly to the advantage of themselves and the public. On the whole, the life insurance examiner is a credit to the profession and his examinations are satisfactory for the appraisal of life insurance risks.

Finally, I would be ungrateful indeed if I did not take this opportunity to express my sincere thanks and appreciation to many of you who are medical examiners of my Company for your excellent work and to many others of you who have so often given me invaluable advice and assistance.

It is hoped that the pleasant relationships which have existed for many years past will continue for the years to come.

Dr. Harry L. Brockmann (High Point): I value the privilege to discuss the subject of life insurance in medicine, which has been so ably presented by Dr. Starr. Dr. Starr is a specialist in this branch of medicine in the capacity of Medical Director in one of the older and larger life insurance companies in North Carolina. I am glad to see the Society recognizing this specialty. In the past we have heard not enough, perhaps, of it. The profession does owe life insurance many things. The profession stands for anything which tends to prolong life and promote health. Life insurance certainly does that. In collecting life insurance, the widows of many of our patients are left in a position not only to pay for their services but are left in a happier sphere of life in which they can maintain their health and a higher level of living.

We benefit, furthermore, by the education of our patients to have periodic health examinations even though they are apparently healthy. We are chosen because we are regular physicians as insurance examiners. No cults are recognized; only the regular profession. Our livelihood in part comes directly from fees collected from life insurance examinations. In making these examinations, as well as in making periodic health examinations, we often find physical defects calling for treatment, surgical and specialized. All the branches of the profession are called in to treat them and we render a service and we collect our fees for that. We find these things in careful life insurance examinations.

To equip ourselves for examinations we develop, just as we do in all the other parts of our work, a technique of taking a history and making a careful physical examination and recording it. Many of us have made examinations for the Army and Navy and for other branches of federal employment. We have made school examinations and others. Our teaching back in medical school of taking a careful history and physical examination applies to all of these, as well as it does to our own private medical practice. There isn't any great difference.

However, there is quite a bit of literature now on the subject of making life insurance examinations. Those of us who are doing this work along with other practice should give it consideration.

I don't know just how life insurance companies select their agents. Dr. Starr has told us something about the selection of the examiners. We know from personal experience that some agents are far superior to others and that sometimes agents are an annoyance. Sometimes I feel that the agents on purpose select the examiner. However, most of these gentlemen are of a high order, especially those representing the genuine insurance companies and they are entitled to consideration. Both the agent and the applicant should have every courtesy extended to them, and surely the medical profession should place honor and character as high, if not more so, than any other group of men.

I greatly enjoyed Dr. Starr's discussion and I commend to you more consideration of life insurance work than the profession has heretofore given. (Applause.)

Dr. S. W. Hurdle (Winston-Salem): Mr. Chairman: I am extremely glad to see this subject come into our discussion halls here because there is hardly a general practitioner who doesn't examine for one or more insurance companies.

I just want to say a word for the applicant who comes in and who is not a standard risk. Most of the applicants come in at the behest of the agent and he is more or less led to believe that no matter what has been wrong with him this agent can probably procure him some insurance. In the course of the examination this should soon come out. I find that it would be an extremely big help to the applicant himself in obtaining insurance if the examiner will go to the trouble if he finds a defect, of which the applicant may be entirely unaware, to call his attention to this, and explain to him that that probably is going to affect his insurability to some extent and that in view of this fact the insurance company is going to have to limit him in some way. All insurance, of course, is not issued as applied for at standard rates. There is such a thing as sub-standard policies and applicants who are not 100 per cent are eligible for insurance with certain restrictions such as extra charges. The examiner should simply use a very homely illustration in explaining why a thousand men at his age are expected to die at a certain rate every year and of the normal man of this age, we will say, the average expectancy will be five out of a thousand to die each year. Well, in this particular group if this man is overweight or if he has a certain excess of blood pressure, that steps up this dying rate from five per thousand to six per thousand each year. After all, that is a 20 per cent increase in his mortality rate and the insurance company is forced to come and charge all of these men an extra rate to compensate. That not only does the applicant a great deal of good but at the same time it does the agent a tremendous favor because it puts the man in a position where he is anxious to get his insurance because he may become uninsurable. It may well be said to the applicant at this time that after a year, or two or three, he may be eligible for a reduction in his rate provided he seeks out his physician and undergoes a treatment. That is a point all doctors should bear in mind. It gives an opportunity to this man to bring himself up from a so-called sub-standard classification into one that may be a standard classification later on (Applause.)

Dr. E. B. Lattimore (Shelby): Mr. Chairman: A lot of times after we have made an examination and recommended the man to be accepted and we know he is all right, we get called on repeatedly for specimens of urine and we kind of lose patience then with the director; but on the other hand, when we see the insured man die then our sympathies are with the medical director.

In my own county a man applied for a $50,000 policy. Two of us examined him. One recommended rejection and the other postponed. It looked like they couldn't turn that premium down and they accepted him anyway. In less than four years he died.

Dr. J. M. Northington (Charlotte): Mr. Chairman: There are just a few points I would like to mention. I know of a lot of X-ray surgeons and various specialists who do regular life insurance examinations. This strikes me as being an unusual and unnecessary distribution of this kind of work. I think it is entirely proper for specialists to do special examinations that are required. For instance, if a man wants a large policy and the company is not satisfied with the evidence and they want an X-ray, it is all right for a specialist to do that. But to do a routine examination—I think that should be confined to the general practitioner.

A very short time ago I had a request from a cousin of mine to recommend a cousin of his to a senator for appointment to a position in Washington. He wrote me that the only thing I had to do was to say that I knew this man and recommended him for the office. I told him that I would write a letter that I had evidence that led me to believe that he would be a suitable man for the office. Not deliberate dishonesty, but very close to dishonesty.

A good many years ago I was asked to examine a man who was 65 years of age. I knew that he had very recently come from a sanatorium where he had treatment for heart disease. I knew that not a week before that time he had been rolled around in a wheelchair. I saw no reason in the world why I should examine him when I wouldn't recommend him for insurance. He didn't like it very much and he went to somebody else. Soon after that he died. I think this question has two sides. I don't think as a representative of the company, which I would have been in this case, I had a right to examine the man when I knew I would not recommend him.

Dr. H. F. Starr (Greensboro): Mr. Chairman, I just want to thank the gentlemen who have so kindly discussed this question.

A question was raised by Dr. Lattimore as to the frequency which we go back for additional specimens. I know that is a source of irritation to the examiner; but in many of those cases it just happens that we may have a record there of a previous examination showing that the speciment was abnormal or the blood pressure was abnormal, and to make sure that they have returned to normal it is sometimes necessary to have a second check. Of course the same applies to the question of blood pressure and pulse rate because we all know they may vary from week to week.

It was brought out by Dr. Northington that general practitioners are the proper men to make regular insurance examinations. It is a general practice of companies to appoint general practitioners as examiners.

However, there are cases where for some reason or another an occasional specialist is appointed.

As to just what procedure an examiner should follow when an applicant comes in for an examination and in the beginning of the examination he finds that there is some condition which will bar him from securing insurance, I think most insurance companies encourage examiners to go ahead and complete the examination and mail it to the home office in order that the company may have a record of it. If this is not done it may be that the applicant will drift around to some unscrupulous examiner and thus obtain his insurance.

Chairman Lackey: The next paper will be by Dr. J. W. McGehee, of Reidsvile, on "The General Practitioner." (Applause.)

Dr. J. W. McGehee: I have practiced medicine thirty-four years. I hope to bring out a few points Dr. Johnson and Dr. Myers have not related.

Dr. McGehee presented his prepared paper. (Applause.)

THE GENERAL PRACTITIONER

J. W. McGehee, M.D., Reidsville, N. C.

For some time we have heard pessimists and the misinformed mourn that the day of the general practitioner is drawing to a close, and that he will soon be relegated to obsolescence. These premature mourners tell us that the general practitioner did a wonderful work in his day; but that now with the improved means of transportation so that more patients are able to visit the doctor in his office, that now with the greater reliance upon the laboratory and with the ever growing extension of our knowledge in the field of medicine, the family physician has outlived his usefulness.

Need I state at the outset that such superficial reasoning and study of the facts is absurd! Far from becoming obsolescent, the general practitioner is the very backbone of our medical organization and the great advancements in the medical technique have increased his utility and efficiency. I regret very much to state that there has been a slight tinge of misunderstanding in a few cases between the general practitioner and the specialist which for the benefit of all the profession, we should swiftly and completely eliminate. We have all heard the specialist accused of knowing more and more about less and less and the general practitioner of knowing less and less about more and more. Both statements, of course, are invalid, and misinterpret their true respective functions.

In this paper today I shall direct my efforts towards pointing out the respective places that the general practitioner and specialist should fill in the medical hierarchy, the relations that should exist between the

two, and the dangers both to the public and the medical profession of state medicine.

The general practitioner is the family doctor, but he is much more than that. He is the person to whom the individual should first turn in case of illness or injury; and the general practitioner if unable to fully and adequately treat the patient should refer the individual to the proper specialist. It is important that the individual first turn to the general practitioner because he can diagnose and treat 90 per cent of the cases that occur, and because he can do so cheaper, quicker, and with less inconvenience to the patient. The general practitioner is able to refer the patient to the proper consultant; for the patient might otherwise seek out a specialist in a field completely foreign to his ailment.

The general physicians are like the trunk of a tall pine tree and the specialists are the few limbs branching out from the top of this tree. The trunk is the largest and main part of the tree sending up from the roots the sap and nourishment to the branches at the top, which receive the sun and carry on functions essential to the life of the tree. Each part of the tree supplements the other part, and they are both essential.

The first duty of the physician is to humanity. Only through the family doctor can we obtain early recognition and possible control of organic disorders, such as diseases of blood, heart, kidneys, the digestive tract and nervous system, control of cancer and mental diseases. Our hurried industrial system with all its tensions and strains has exacted its toll in the increase of mental disease. But whether there has been a tremendous increase in mental disease or whether the increase is merely apparent rather than actual due to the greater recognition of cases and their admission to institutions, I believe you will agree with me that insanity is one of the big problems before us today. The commitments to institutions for mental disease has almost paralleled the increase in the matriculation in the colleges of the country.

The general practitioner must use business methods in handling his fees, keeping his books, and submitting his bills. There must be a manner of efficiency in the way he runs his office and answers his calls. Above all else he must retain his individuality and avoid the stereotype into which it is so easy to fall. He must develop a dominant personality and wear a contagious smile. The physician must remember that the practice of medicine has to do with human beings and not "cases." Each physician should be an internist and diagnostician in the fullest sense of the word. The practitioner must rely upon technical equipment and the laboratory to aid him, and he should use them to the fullest extent advisable. However, he must never rely upon them completely. One patient once complained that he wished the doctor would examine him more and the X-ray film less.

Gentlemen, do not misunderstand me. A laboratory is an absolute necessity; no one denies that. Simple routine laboratory tests can be

and are made in anyone's office, and more complicated ones can be made by taking material and sending it to one of numerous standard commercial laboratories or to the state laboratory. Every physician should make these tests and avail himself of the latest equipment and methods. What I am trying to get across is that the physician should not depend upon them exclusively, but should also allow his long training, knowledge, and experience to bear upon his handling of the case. Dr. Charles Mayo once said that what a doctor had under his hat was far more important than what he had in his laboratory. In other words, the intellect is the sine qui non of the medical profession.

Undoubtedly, gentlemen, specialization has been greatly overdone. People seem to be obsessed with the idea that there must be a specialist for every human ill. A human being is not simply a group of disconnected functions but a harmonious combination of many interrelated functions. The point is that the general practitioner can successfully and safely care for most of his cases and makes a grave error in turning every little case with which he is not completely familiar over to a specialist. He should study such a case and broaden his medical horizon so that the next time he meets a similar case he will be fully prepared to handle it with complete confidence and assurance.

The family doctor knows the history of the patient, his peculiarities and idiosyncrasies, and is less likely to rush into some unwise action. In actual practice the general practitioner and specialist should work together that the patient will never lose sight of the undoubted important part the general man has played in his progress.

The relationship that I would have exist between the specialist and general practitioner is just this: The general physician refers a patient to the proper specialist when he feels that the particular illness of the patient warrants it. The physician and specialist would then coöperate in the care of the patient until he had recovered. On the other hand, if a patient approaches a specialist with some complaint outside the field to which that specialist has limited himself, he should refer the person back to some general practitioner or to the proper specialist.

A moment ago I said that specialization was being overdone. Let me go back and qualify that statement by explaining what I mean. To my mind a specialist should be first a good general practitioner and then a specialist in some limited field. The practice of limiting one's practice immediately upon the completion of formal training is wrong. A doctor should only specialize after serving as and gaining the valuable experience of a general practitioner, and the medical schools should so encourage its students, but I have been led to understand that the schools are doing otherwise.

A little pamphlet recently published entitled "Trends in the Medical Profession" gave me these facts. Formerly, graduates considered it advisable to serve several years in the general practice of medicine

before preparing for the practice of a speciality. A progressively increasing percentage of those limiting their practice to a speciality are doing so without having had any experience in general practice aside from that involved in connection with an internship or residency. In 1915 30 per cent of the medical college graduates limited their practice to a speciality without having had any general practice, but 34 per cent of the graduates that year experienced between 5 and 9 years of general practice before specializing. The situation had so changed by 1930 that 69 per cent of the graduates of that year specialized without first entering into general practice and only 1 per cent first entered general practice for 5 to 9 years before specializing. These statistics startled me, gentlemen, and I do not believe that the pronounced tendency they show is the wisest one. Surely more than 1 per cent of the specialists should have as much as 5 years experience as a general practitioner, and most certainly institutions should not discriminate against general practitioners in giving appointments for special training.

There is a different relation existing between the specialist and his patients from that between the general practitioner and his patients. The specialist sees most of his patients in his office and knows little of their home life. The family physician must be with his patient at all seasons, in sorrow and joy, in death or recovery, from the dawn of life to its sunset, at all life's entrances and at all its exits, from the incoming wail to the outgoing groan.

We need our State Board of Health, State Laboratory, Tuberculosis Sanatorium. We should have a tuberculosis sanatorium in every county. We need some specialists, but not as many as we now have; and, last but not least, we need our general practitioner who should be in very truth a specialist in general medicine and surgery.

I am reminded of this little piece I copied from the *Kansas Medical Journal*, by H. W. Davis:

"If you can set a fractured femur with a piece of string and a flat-iron, and get as good results as the mechanical engineering staff of a city hospital, and at 10 per cent of their fee:

"If you can drive through ten miles of mud to ease the little child of a dead-beat:

"If you can do a podalic version on the kitchen table of a farmhouse with husband holding legs and grandma giving chloroform:

"If you can diagnose tonsillitis from diphtheria, with a laboratory forty-eight hours away:

"If you can pull the three-pronged fish-hook molar of the 250-lb. hired men:

"If you can maintain your equilibrium when the lordly specialist sneeringly refers to the general practitioner:

"If you can change tires at 4 below at 4:00 a.m.:

"If you can keep the chap with lumbago from taking back rubs for kidney trouble from the chiropractor:

"Then my boy, you are a Country Doctor."

If the general practitioner with the literary education required and a four years course in medicine and with one or more years interneship cannot diagnose and treat the patient then we should change the curriculum for our medical students.

What are some of the things we are doing?

1. Giving diphtheria toxoid to prevent diphtheria, giving 10,000 units diphtheria antitoxin to patients who have a suspicious throat and not waiting for a laboratory report for diagnosis.

2. We are giving scarlet fever prophylactic serum and curative scarlet fever serum for scarlet fever cases, also giving sulfanilamide in these cases.

3. We are giving streptococcus serum and sulfanilamide for erysipelas.

4. We are giving measles convalescing serum to mitigate the attack and lessen complications.

5. We are giving prophylactic whooping cough vaccine and curative whooping cough vaccine for whooping cough and it helps.

6. We are vaccinating against smallpox and typhoid fever.

7. We are doing early spinal tap for cerebro-spinal meningitis and if the fluid is cloudy and flows with increased pressure and contains the meningococcus, we give the meningococcus serum and sulfanilamide.

8. We are typing our pneumonia patients and if the sputum types one and two, we immediately give the pneumococcus serum with 60 per cent success, the temperature falling to normal in 24 hours.

9. We are practicing prenatal care and delivering many obstetrics patients in the hospital where we can have good technique repairing cervix and perineum when indicated.

10. We are examining stools for ova.

11. Having stomach analysis made and G.I. series when suspicion of gastric or duodenal ulcer and carcinoma—also X-raying for gall bladder and kindey disease. Diagnosing and referring acute abdominal cases to competent surgeon within first 12 hours of the disease.

12. Giving tuberculin tests, X-raying chest, and, if in doubt, referring them to State Sanatorium for further examination.

13. Making binomial vaginal examination using vaginal speculum—cauterizing erosion of cervix, diagnosing early cancer of cervix-uterus and having vaginal discharge examined for gonococci and tricomonos vaginalis.

14. In case of accidents where suspicion of a dislocation of fracture—X-raying patient.

15. We are eternally on the watch for focal infections in tonsils, teeth, gall bladder, intestines, and prostate and the many remote diseases it causes.

16. We are reading our journals, taking post-graduate courses, attending medical society meetings—in fact, we are alert, capable, courageous, hopeful, energetic, and doing our work conscientiously with marked success.

State Medicine

In these days of "crackpot" radicals and "Wildeyed Utopian schemers," we of the medical profession must keep our feet soundly planted upon the broad earth.

First, I would like to question the necessity of Federal free hospitalization of war veterans suffering from ailments in no way connected with their enlisted services. The government has gone so far that it is treating veterans perfectly able to pay their doctor's bills: Veterans who happened to be hit by a golf ball during a round of golf or in an airplane accident on a pleasure trip to Miami. It was discovered in a Congressional investigation in 1934 that more than 77 per cent of all war veterans receiving treatment in government hospitals were suffering from ailments in no way related to their war service. It has been estimated that prospective increases in non-service connected cases will require 100,000 additional hospital beds at a peak cost of 140 million dollars.

It is not the free clinic as we now have it that we must oppose but instead, the wild socialistic proposals to place doctors upon the state payroll who shall then give their services free to all who seek them. One such scheme proposes that 3 sets of doctors work in 8 hour periods each day. A prospective patient would then seek the doctor on duty at that particular time. It is most kind of the advocates of such a scheme to desire the doctor to have an 8 hour day, especially as it is unrequested by him; but we of the medical profession know that such a scheme would demoralize the profession itself. Even the layman can see that it is absurd to have one doctor attend a patient in the morning, another doctor late that afternoon, and still a third doctor that night. The doctor on duty during the morning and early afternoon would be rushed to death while the night doctor would have ample time to read *Gone With the Wind* and *Anthony Adverse.*

I wish to take this opportunity to warn you that socialized medicine will destroy the high ideals of the medical profession. I don't know of any comparable group of men in any class, profession, or walk of life who are as universally admired and esteemed as the members of the medical profession. We can say with all due modesty that our standards have been high and our contributions to the health and happiness of the citizens of this great democracy have been beyond estimation. Our profession has progressed because it has planted within each of its members the seeds of initiative, responsibility, and high ethics. Our profession will continue to progress as long as we cultivate those seeds.

I fear that on the day the State destroys the independence of the medical doctor when it tells him how much he shall earn and whom he

shall serve that on that day those seeds will no longer sprout into the beautiful flower of service. The medical profession will no longer be the joy it is to us who serve in it, but instead one long monotonous grind of filling out official blanks. The doctor with his responsibility gone loses his personal interest in the patient and devotion to his welfare. Instead of cultivating the health of his patients he will be forced to cultivate the favor of certain important politicians on whom his job and possibility of advancement lies.

Nor will the fact that he pays no fees mean that the patient is getting cheaper medical care. The patient would under State Medicine through higher and higher taxes have to pay in addition to the cost of the medical service, the costs of collecting the taxes and hiring a large body of administrative officials, clerks and stenographers. Another field for graft and corruption would be opened. The doctor would receive a smaller, limited salary and the patient less care and consideration. We of the medical profession must not bicker nor compromise—we must for the welfare of the public and the medical profession unalterably oppose the State Socialization of Medicine.

The medical profession has always given about one-third of their time to charity patients and to patients who do not pay their bills. Do the advocates of State Medicine do this much for the dear people they are so much interested in?

The advocates of State Medicine are those people who are on the public payroll or are employed by insurance companies, determined by law to force compulsory health insurance.

I am indebted to Dr. Tom Kirkwood for the following summary in the Illinois Medical Joural:

Summary

1. The general practitioner will continue to do most of the medical practice in this country regardless of what changes take place.
2. He can be improved but not replaced.
3. This improvement must depend upon his own iniative and upon his own organizations.
4. His ability cannot be increased by legislation. His efficiency will be hampered by state interference.
5. The medical profession is a great temptation to social planners, professional altruists, social theorists, social exploiters, and practical politicians. These men are now well prepared for an onslaught in order to gain control of our work.
6. State Medicine or Compulsory Health Insurance will be a political football and hence will accentuate present difficulties instead of curing them.
7. The present "Social Security Act" is an opening wedge. It calls for service to the blind, the aged, the unemployed, maternal and child

health, crippled children, child welfare, vocational rehabilitation, and public health work. The expense connected with all of this will be something for even the present crop of magicians to think about.

8. Most of our present socialistic projects are possible only because of government credit, which in turn depends upon stored up wealth and national income. When this stored up wealth gets low and the national income fails to meet the bills, credit will disappear—and then how will we meet the expense connected with these "Security" Acts?

9. The general practitioner has a large enough load on his back at present without saddling any more experiments upon him. Let us not depend upon the promises of any party, but concentrate upon our own local representatives and senators.

Dr. Roy Mitchell (Mt. Airy): Mr. Chairman and Members of the Section: My remarks will be brief and to the point. I am not able to improve on the comprehensive paper of Dr. McGehee. Its consciseness and its honesty and its fairness represent the personality of the man who prepared it. The times, though, do make it necessary that all of us give it some thought.

The two thoughts which I wish to re-emphasize are: First, the relation of the general practitioner to the specialist. Now, in a society in which all the problems of the people are met by general practitioners the existence for specialists is unnecessary and will become impossible. The only reason there are specialists is because there are problems which the general practitioners are not solving. It is as basic as the economic law. Now that means that we as practioners must study; we must do our work in a business-like and efficient manner; and we must put some intelligence into it.

I am free to confess that I am not very enthusiastic about changing the tires at 4 below, at 4:00 a.m. I have never encountered many conditions in which that was necessary. I have learned from experience that one patient at 2:00 a.m. takes more out of me than twenty patients from 8:30 a.m. to 5:00 p.m.; and the work that is done by me that is of most value is done during those working hours. What I am saying is this: that the doctor, having an ordinary human mind which works according to psychological laws, is subject to habits. As we all know, our characters after all are our habits; and we must have the habit of thinking straight, of keeping up, of concentrating, of putting our mind on what we are doing and doing it efficiently and effectively. The question of the general practitioner versus the specialist is going to be settled by that one thing. If there is something I can't do I am going to get the patient into the hands of the specialist. If there is something I can do, I make a point to do it. In short, the success of the general practitioner depends upon his own energy, his own intelligence, and his own initiative. We must take care of our patients ourselves.

Second, is the question of State medicine. As the question is turned over there are many points of view that are presented. It seems to be an age of socialization in which we are in the hands of the social scientists who think that medicine must be socialized. My own personal opinion of it seems to be this: who wants socialized medicine? We don't want it. The man who can pay for the doctor he wants certainly doesn't want it. The man who can't pay for a doctor doesn't want it either. Who does want it? There is only one class of people, as I see it, who want it, and those are the people who are idle and who have the disposition to attend to other people's business and who live by maintaining a position on the Government pay rolls. The service which they render for this livelihood is that they get the poor devil who can't afford a doctor to vote his allowance under WPA, I believe it is, or PWA. The vote getter knows that through the social service worker he gets these votes. Now those who know, know that that is now a political football.

Last week at Greensboro there were several hundred social service workers in convention. The one hitch in their program is the socialization of medicine. They can get clothing and food of a kind and everything they want, except the medical service that they want, to the people whose votes they are buying for the Administration with the WPA funds. Now, the question is: if they continue to want it and we don't want it, what are we going to do about it? Here is a generation of medical men who won't always be here. We will have to meet the situations as they arise and depend upon those who come after us to have the same initiative to take care of them as we have.

I heard a member of the Labor Advisory Board to the President say to a session of this Social Service Convention that the doctors do not want socialized medicine and for a time they would not be able to get it.

Now, the preservation of the medical profession depends upon two things; one is that we know what to do, and the second is that we be sufficiently organized to stick together and do it.

If the next crop are afraid, it means the inevitable consequences; they are going some place else and they are not going into the medical profession. If there is nothing to look forward to, if we are going to have to be told what to do by some political bureaucrat, of course, men of the type who are sitting here this afternoon will not be practicing medicine. In short, the problems of the general practitioner in retaining his work depend, first, on knowledge and intelligence to do that work, and second, the energy to do it.

The failure of socialized medicine depends upon the success of organized medicine. (Applause.)

Dr. J. B. Ray (Leaksville): Mr. Chairman: There is nothing I can add to the essay or the discussion but this one thing: I hope that our profession is to be second to none. (Applause.)

Dr. J. M. Northington (Charlotte): I can commend everything that Dr. McGehee said in his paper. I thoroughly enjoyed it.

The thing that encourages me is the fact that we have a Government of the people, by the lawyers, and for the lawyers; and that the lawyers recognize that the so-called learned professions, the ministry, medicine, and the law, are classified together in the average man's mind. These lawyers will have foresight enough to realize that once the services of a physician are provided to every individual by and through public funds that the next step will be the provision of legal advice. I tell you that I am firmly convinced that no lawyer is going to vote for that. (Applause.)

Dr. J. W. McGehee (Reidsville): Mr. Chairman, I wish to thank the gentlemen for the discussion of my paper.

Chairman Lackey: We will now have the Report of the Nominating Committee.

The Nominating Committee reported that Dr. R. L. Murray was nominated as Chairman, and a motion was made that he be so nominated. The nomination was duly seconded. A motion was duly made, seconded, put to a vote and carried that the nominations be closed. Dr. R. L. Murray was declared elected Chairman of the Section for the ensuing year.

Chairman Lackey: The last paper on the program is "Syphilis, its Management in General Practice," by Dr. John H. Mickley. (Applause.)

Dr. John H. Mickley then presented his prepared paper. (Applause.)

THE MANAGEMENT OF SYPHILIS IN COUNTRY PRACTICE.

John H. Mickley, M.D., Tabor City, N. C.

I propose to present in this paper a picture of Syphilis as seen in an ordinary southern medical practice. I do not wish to prove anything. I have no axe to grind. It seems worthwhile to me to tell, as nearly as I can, just how a country doctor discovers his syphilitics and how he treats them.

There is something unique in applying syphilology in a little country town. Not only does one deal with a specific medical problem—the patient, but also with a sociological problem—the patient's kin and contacts. In a little village every one knows, by some strange telepathy, just what every one else is doing. A physician then, in such a locality should have a good grasp on the village gossip, for many a diagnostic clue comes that way. By the same token it behooves the doctor not to say too much on the subject even though much propaganda is now abroad.

In the last six months of 1937, I reported forty-eight cases of syphilis to the county health office. Of these about one-half were early cases and the remainder were latent, congenital, and late cases. No case was reported unless either a positive darkfield, or Wassermann, or both was found.

Of late it has become plain to me that treating syphilis by the routine clinic fashion is wrong. There is in such a system no individualization of treatment, no human touch, and not much humanity.

We have been taught the disease is one of protean manifestations. Who has told us that these manifestations should be treated with equally protean methods?

Recent discussions in the *Journal of the A.M.A.* leave one with the impression that general practitioners do not know much about the treatment of syphilis. But these discussions quote clinical reports from Public Health departments and hospitals as their data and then say, "How much worse must be the condition in general practice?"

Well then, how much worse? I believe that any general practitioner who is interested enough to ferret out the syphilis in his practice is capable of treating it. I believe that he can treat it infinitely better than the large clinic. Of course it calls for troublesome details. But the practitioner gets to know his case better, he knows the background, he knows the contacts.

I would like to list at this time certain aids which are available to the country doctor in this work.

1. The State Health Department Laboratory.
2. The County Health Officer.
3. The excellent texts of Stokes, Kolmer, and Moore.
4. The venereal disease information of the U.S.P.H. departments, the J.A.M.A., and the Archives of Dermatology and Syphilogy.
5. The reputable drug houses of Abbott, Merck, Parke Davis, etc.
6. The A.M.A. convention.
7. The State conventions.

With the aid of these listed agencies to keep up with fresh knowledge and with the long personal contact with the patient, surely one cannot avoid becoming somewhat of a specialist in this work.

I am somewhat amazed at the number of syphilitic cases that I see in general practice. It occurs in small epidemics of new cases, but these new cases are always added to the old ones already under treatment and soon one has quite a large number under treatment or observation.

Rheumatic fever and tuberculosis would also pyramid up the cases in a country practice just as syphilis does. But we lose the tubercular cases to the Sanatorium and the climate in our section does not favor us but with a stray rheumatic case. But the diabetics and luetics are always with us.

I present herewith ten cases. They are not formally presented as case histories. Each case presents a problem to be solved. The problem may be diagnostic, therapeutic, social, or even moral. I have tried to picture the case as I saw it and to tell what I did about it.

Case No. 1. Jamieson B.

Jamieson is a typical small town "sport." He courted a grass widow in the spring of 1937 and developed a chancre after some two months of her company. Darkfield and Wassermann were both positive when he applied for treatment in April.

Treatment with Neo was given in weekly doses of 0.6 gm. After two such treatments the chancre disappeared and so did Jamieson. He returned though, in about a month with a florid rash and throat involvement. A few more injections were given, the rash faded and the throat became almost clear.

He then had an auto accident and fractured his nose. This was treated by a specialist in eye, ear, nose, and throat. This physician was dissatisfied with the progress of the nose in healing and suggested a septum operation and tonsilectomy. Jamieson refused the operation because he was afraid the specialist would discover need of more surgery than that outlined. During this time mucous patches and lip secondaries were present and painful. Only mercurochrome was prescribed by the specialist. No Wassermann and no darkfield was taken.

Jamieson returned in July for another session. The secondaries and mucous patches he could bear, but not a recidive chancre which appeared in the old scar on the glans. He took two injections of Mapharsen and then took a trip to South Carolina. He fared well on this trip and saw no doctor. But in October crops of furuncles and pemphigus lesions from minor wounds on the skin forced him back to the office. This time I laid down the law, either be consistent in treatment or excuse me from blame.

He is intelligent, he is contrite, he reads up on Public Health news, he learns the danger of sporadic treatment, he takes three injections—and quits.

I see him now in the office occasionally when his conscience bothers him, but the treatment is very casual. His general health is good permitting him to loaf at the pool room and to still court the grass widow.

Comment:

What is the best treatment for this quixotic individual? I think persuasion and coaxing, with the drug to be Bismuth in Oil. I would recommend a Public Health Department survey of his contacts, because the mother and two sisters of the grass widow are infected—an endemic focus of syphilis.

Case No. 2. H.R.

H.R. is sixteen years old. He is a simple country boy, "green as a gourd." He is illiterate and moronic to boot. With a perfect setup like this, his story, though hard to believe, becomes a little more credible.

In May 1937 H.R.'s father brought in a negro tenant with gonorrhea and a chancre. The negro had been infected by a wench employed in the landlord's kitchen. In due time the landlord fetched the negro kitchen

girl likewise for treatment. Chancres, condylomata, and gonorrhea were found on her.

The payoff came on June 1 when the dejected landlord brought in his own son, the equally dejected H.R. The boy had been seduced by the negress at 10:00 a.m. May 25 in the kitchen of his home.

Already the gonorrhea was evident in the boy. Routine treatment was begun for the gonorrhea, and a Wassermann was taken. This proved negative as did weekly tests for four weeks. Now here I blundered badly and lost three weeks of valuable time for the discharge became free of gonococci very promptly but did not cease. Then the urethral meatus took on the appearance of a puckered golf hole and the urethroscope showed an anular chancre two centimeters posterior to the meatus. Dark-field positive.

Weekly injections of Neo with overlapping courses of Bismuth until the present day have resulted in good health and a negative Wassermann. All clinical evidence of the disease has vanished. The intensive and continuous treatment will be continued for six months.

Comment:

This case should have been treated presumptively even though the proof of syphilis might never have been obtained. The proof of exposure was so obvious.

Intraurethral chancre is not rare in this locality. In two cases I have verified a hunch that the urethra had been traumatized with resulting chancres.

The trauma arises in a peculiar fashion. It is a belief of our ignorant yokels that if ear wax be coated on the glans and stuffed up the urethra the "clap will be shunned off."

The problem of infected domestic help appears here in a new aspect.

Case No. 3. Connie T.

Connie T. is a good woman. She is a moral, hard working young woman of no slight beauty. She was heart-broken two years ago when her husband deserted her. She was enraged one year ago when, on consulting her physician for some minor ailment, she learned that he had left her something to remember him by.

Her history going back six years is vague. Only two items stand out, first, a general weakness dating from the birth of her only child, and second, a four plus Wassermann discovered one year ago.

She started treatment and I presume Neo was given, but on the very first dose she had a tremendous reaction and feared to take another. She quit her physician and consulted two others each with a new drug. These, too, upset her. During most of 1937 she kept up a fearsome existence with her secret eating her up mentally and taking no treatment whatever. Late in that year the public campaign against the disease brought her out of hiding to consult me.

Aside from her mental upset—syphiliphobia and a four plus Wassermann, I found nothing. Three months of Mapharsen and overlapping Bismuth injections have reversed the Wassermann, and reassurance has erased her fear.

At the second visit to my office I caught up with the child and found her to have a one plus Wassermann. Treatment with Bismuth reversed this in eight weeks.

Comment:

Scare propaganda reduced this lady to a profound neurotic state.

Due care in selecting a very mild therapy while confidence was being restored was in order. Bismuth (Searle) to Thio Bismol (P.D.) to Mapharsen in increasing dosage.

Three physicians tested the mother's blood and attempted to treat her —none looked at the child.

Case No. 4. Mr. and Mrs. C.

Benny C is an oldster in the Indian Summer of sexual life. He favors a prostitute only because of circumstance, because he is old and unlovely. In April 1937 he developed gonorrhea and a penile chancre-chancroid.

Simple cleanliness and sulfanilamide removed his chancroid and gonorrhea in short order. Since he was physically well preserved a course of Neo and overlapping Bismuth was given. His Wassermann is negative now.

In August his wife, aged 68, sent for a malaria treatment. The bearer of the message said the old woman had been "fevered" for three months. She was sent for. She was indeed fevered as well as rashed with secondaries.

Now this old woman had been bed ridden for two months; she was wasted and ill. Her heart was weak, her arteries were hard.

Bismuth (Searle) was the drug used, 0.1 gm. bi-weekly for one month then 0.2 gm once a week for two months. An occasional injection was withheld because of Bismuth gingivitis. General feeding and symptomatic treatment were of great importance in her care. Mercury inunctions were used when the Bismuth was withheld. She is now in good health, the Wassermann is still positive.

Comment:

Here we dealt with two old people. The man was able to take routine treatment. The old woman was not a good risk for arsenical treatment. Her diagnosis would have been most difficult without her history, for the secondaries simulated the dermatitis of pellagra most closely. Her general appearance also was that of a pellagrin.

Early syphilis in aged people is not common in our community.

I feel most strongly that treating the patient rather than the disease is in order here.

Case No. 5. Evelyn R.

Evelyn is a 20 year old saleslady in a Whiteville store. She is poor but virtuous. She became infected innocently while staying in Wilmington and was appraised of her ailment on consulting a physician there for a sore throat. Not having money for treatment and fearing the public clinic of the city, she returned to her home. She hid her trouble from her family and took no treatment. The disease became latent and she again began to worry when her hair and eyebrows fell out.

The Priest of her Parish sent her to me in September of 1937. Routine Neo with overlapping Bismuth treatment have restored her appearance and good health. She is enthusiastic over her progress and is a most faithful patient. The Wassermann has not reversed.

Comment:

This girl hid her troubles through fear and shame. That she was innocent made the disease appear even more shameful to her.

A wise clergyman explained away the moral disorder and put her under medical care. In our town the Protestant clergy has been as active as the Catholic in preaching not sin but early and edequate medical care.

I am most grateful to these modern thinking gentlemen of the cloth.

My nurses have on three occasions prompted me to take blood tests because they noticed that syphilitic women often lose their eyebrows.

Case No. 6. Maud M.

Oliver Wendell Holmes, in wittily summing up the character of Ricord, the leading syphilographer of their day, said that Ricord would suspect even the vestal virgins and submit them to his inunctions and mercurical specifics.

Dr. Robinson at Hopkins startled us, his sophisticated medical students, by saying, "We should view even our own mothers with the jaundiced eye of suspicion."

In 1932, tired from my studies, and proud of my new medical diploma, I went to the mountains of Pennsylvania for a rest. I visited there my paternal aunt who had cared for me in infancy and childhood. She complained of a severe sore throat. It was a quinzy, she said, caused by the cold mountain night air.

Remembering the words of the masters, I sought out the local hill-billy doctor and that night through his microscope we saw the treponema pallida. Her husband was a marine lately returned from Nicaragua with a "Tropical boil."

We gave her old arsphenamine with alternating courses of Bismuth for eighteen months. The Wassermann was negative in 1933 and has been until today. She is developing a slowly progressive aneurism of the ascending aorta. Her general health is fairly good. Twice a year she takes a course of Bismuth.

Comment:

This case of peculiarly personal interest to me can be moralized on in two words—*eternal suspicion.*

Case No. 7. Helen W.

Helen was a widow of middle age. She lived alone with her illegitimate son in a little house in the swamp below town. She came to me in the spring of 1936 because of great abdominal swelling. Her neighbors had begun to talk but she swore she had known no man for five years.

She had a cirrhotic liver which was easily palpable after paracentesis. The Wassermann was four plus.

Bismuth therapy was started soon after her first visit but the treatment was directed to combating the ever increasing ascites. Dieting, dieuretics, and purgatives all were used, had their small benefits and failed. At last only repeated paracentesis afforded her any relief. I used to draw off two standard buckets of fluid each Thursday morning.

The Bismuth injections finally (after 12 of them) gave her a severe gingivitis. They were discontinued. Then it occurred to me to use a little Neo even though the rules are adamant in cases of kidney or hepatic dysfunction. I gave her 0.2 gm as a tentative dose. To her great joy she improved in that week in magical fashion. She felt good, even the fluid did not form that week.

I was just as happy and as deceived. The Neo was repeated at the end of the week this time 0.3 gm. Three days later she returned with a little itching of the skin and three days after that she peeled like a snake.

I did my best with Thiosulphate and all else that I'd ever heard of, but she died of arsphenamine dermatitis ten days after that second dose of Neo.

Comment:

I have seen two cases of arsphenamine dermatitis recover, but they were not severe and the patients were very hardy. A little less zeal in specific therapy on my part and Helen might still be getting tapped every Thursday morning.

The word "late" might be changed to "degenerative" when used with syphilis. It would describe affairs better.

It is apparent that the arsenicals may do good in this stage but their value is overbalanced by their capacity for harm. I am most cautious now in using arsenicals when degenerative states are present whether these are of syphilitic or of other origin. Helen's case was a fine example of therapeutic paradox.

Case No. 8. Walter C.

Walter was a man of the Major Hoople type. Nothing very good about him, nothing very bad. He died in November 1937 respectably, like a

Christian, in bed. Heart disease was written on the death certificate. Many old friends mourned the passing of the "good old skate."

In 1925 Walter and a close buddy went to Florida to cash in on the boom. These two worthies had one vice in common. They liked "dark meat." They lived in Florida for a year with negro "housekeepers." Both returned home and took up the life of model citizens in 1926. They both took very short courses (2 or 3) injections of Neo in Florence, S. C., but the expense and secrecy involved did not seem worthwhile.

In 1936 Walter began to have vague anginoid attacks. He was given only digitalis by his physician. In February 1937 he first consulted me.

He had an aneurism of the arch of the aorta. The peripheral arteries were much sclerosed, the blood pressure 200/40, and classical signs of decompensation were evident. The Wassermann four plus.

I gave the usual injection of Bismuth, once a week, for as much of the time as I could persuade him to come back, under pretense of treating his heart. He did well when given digitalis and mild sedatives. However, he steadily seemed to wilt down. In October he was in a street brawl and fell to the ground unconscious. He was carried to the nearest hospital and rallied a little. He did not rupture the aneurism but died of myocardial failure by the dropsical route.

Comment:

No better simile than that of Maurice Pincoffs; "A man with cardiovascular syphilis is like a man in a canoe drifting down a mountain stream at the end of which is a precipice. All about him rise black unscalable cliffs. He paddles frantically and stems the current a little but swiftly he is swept over the brink. . . . "

I am strongly tempted to moralize here but will forbear. Surely if the propaganda of our present campaign is of any value it will prevent tragedies like this. A little prodding of the physician as well as the patient was in order here. Walter was not advised, so he drifted.

Case No. 9. The Isoms and The Bings.

In January 1937 a newly married colored girl, Rebecca Bing, came for treatment. She had multiple vulval chancres.

By finding her contacts I soon had assembled her husband, his closest friend and the friend's wife and the wife's son by another man. Here was a little epidemic. An itemized list is:

1. Boy—Meningo-vascular syphilis.
2. One woman with chancres.
3. Two men with secondaries.
4. One woman with latent syphilis and early pregnancy.

I had all these folks report on one day. I lectured to them and explained the nature of the "Old Pox" in terms they could understand. I promised them "Pure Cure" and suggested they buy all the medicine as a group so as to lighten the costs.

Now they were simple hard working niggers, but they took me at my word and faithfully carried out the treatment for one year. I used Bismuth, Neo, and Tryparsamide for the boy. I used Bismuth, Arsphenamine and Neo-arsphenamine for the adults. In 1938 they are all clinically cured. The Wassermanns are all negative. One very healthy child has been born. They have been my most tractable patients.

Comment:

The Negro must be advised in terms he can comprehend. He must then be scolded and praised according to the rules of child psychology. I do not try to scare him because he scares too badly.

The problem of money spending over a long time with nothing to show for it does not appeal to the Negro. He wants treatment but feels he can't keep on paying. It is my practice to make him buy at first as much of his medicine as possible. Each week he brings his ampule and is injected. He thus sees something being done and he has to keep on because he still has unused medicine.

A very simple booklet given to colored school teachers would help a lot. These teachers, of whom I have treated many, have been quick to send me syphilitic children.

Case No. 10. Mary Alice P.

Mary Alice is a colored child, 7 years old. I first saw her in the winter of 1935. She had syphilitic bone involvement, alapecia, and defective teeth. Aside from the specific disease she was wormy, rachitic and underdeveloped. Her parents were indigent farmers from the deep woods back of Dothan. In her mentality Mary Alice resembled a wild animal.

The child's case did not interest me at first, but she would appear on the days I had appointed with almanac-like regularity, always alone. I would find her crouched unobtrusively in some corner of the building waiting. Little gifts of coins, food, and toys from the other patients probably lured her to make the long trip, and her parents did not miss her.

I gave her 0.1 gm. of Bismuth Tartrate Solution each week for eight weeks, then rest periods for three weeks, during which she was rubbed with mercury ointment. These courses were used until January 1938. I attended to the other ailments as time went along—worms, vitamin deficiency, nutrition, etc. The nurses have even educated her a little as to hygiene and manners.

I do not know precisely where to stop with this case. I intend to follow textbook advice and see what one case at least will do under the endless treatment that they all seem to recommend. At present the child is extremely healthy and tough. The Wassermann is one plus. She is intelligent and endowed with an animal-like cunning. She has been vaccinated for the preventable childhood diseases.

Comment:

I propose to use Neo-arsphenamine for this child next. Sulpharsphena-

mine is an alternative. The Bismuth Tartrate Solution is safe for children. It is slow in action.

I have had three fatalities in children under two years of age when using Thio-bismol. This was due to failure to find a therapeutic instead of a toxic dose. Not all small children react alike to the specified dose and the action of the drug is rapid.

I have never used Bismarsen for children.

Conclusions:

I am suspicious of everyone but I hold suspect in particular:

1. Sore throats.
2. Pudendal lesions.
3. Prenatal cases.
4. Domestic servants.
5. Barbers and railroad men.
6. Exanthems in high school children.
7. "Rheumatisms."
8. All Negroes.

The present low prices of antiluetic drugs make it possible to treat any patient in this locality no matter if his finances are very shabby.

Perhaps the best thought in closing is to consider no case of syphilis as completely cured, but only arrested.

All the reputable clinics adhere to this rule but their major problem is the follow up—the check on the patients in the years after treatment.

Now here is where the country doctor has a great advantage because there are but three conditions in which the doctor lives constantly with his patients; on shipboard; in prisons and asylums; and in the country village.

Dr. J. A. Morris (Oxford): I didn't get all of what he said, but it was all very interesting. He talked in familiar terms, and I am very glad that there are those in the profession who are doing just what we of the Health Department are doing. They call me in my county "syphilis-minded" because I suspect almost everybody and I believe it is the best attitude. If we take that attitude toward the public we will discover, as I have experienced, some surprises that we didn't think to find, but we do find by attaching just that much suspicion to everybody.

We have got to release our minds from that idea that it is only an immoral infection. It is not that. The idea of the immorality, or the social disease, as we refer to it, must be dropped away, because there is a residue of syphilis that we will never get as long as we attach that thought. It is in those who will not come out. Many people do not know that they have it. If you will examine the girls who apply for service in cafes you will find that some of them when you ask them how long they have been infected will answer, "Infected with what? I didn't know I was infected." Tell them that they have syphilis—and they apparently must

be in the latent stage—and then try to inquire about the primary condition, and they have no knowledge of it whatever. I do not believe everyone of them lie about their condition; but they have been infected whether morally or immorally. We do know that the public drinking cup and the careless kissing are sources. That is one thing that ought to be tabooed by law. We read a report where one young man went to a party where there were many young ladies and there were seven cases of syphilis originated from his kissing a lot of them. He didn't kiss seven himself, but there were seven cases traced up by the epidemiologist.

We are very much obliged to the gentleman who read that paper for his "syphilis mind." I am proud of it because you will do the public a service that you could not do otherwise.

To the list of suspected places I would like to add the lumber camp, especially the large ones. That is a prolific source of syphilis. If the doctors will always look in those lines that he has mentioned, with the addition of the lumber camp, and keep on the suspicious side, they will do a great service. (Applause.)

Dr. C. W. Durham (Greensboro): Mr. Chairman, I certainly enjoyed this paper as much as any paper we had.

The last fifteen or eighteen months I have treated more syphilis than I have in the eleven years since I graduated; and it has meant a lot to me in knowing how Dr. Mickley went into the history of these different patients and finding as many patients as he could that had been infected from the one he happened to get. That is what I have been doing in the last fifteen or eighteen months. If I found a man or a woman who had syphilis I would ask for the wife or the husband, and the children and the maid; and I have found that I have run down as many as four or five where they have been in the same home and they all had it.

I have also observed in different patients going to different doctors that some doctors treat a fever blister as such, giving a dose of calomel as though it were just a minor thing.

I have one patient now who went to another doctor and finally he came to me because he felt like I knew him since I had treated his father. I saw the sore and said, "It looks mighty suspicious to me." I took a blood test and it came back four plus. I asked him to take a treatment and I asked his wife. She said, "Doctor, I haven't had a thing and I haven't seen a thing." About one o'clock in the morning she called me and said, "I have a sore that I didn't know about and I want to take a treatment tomorrow." It worried her. It is important that we go and trace these cases.

I have found sometimes in reporting these cases to the health officer that the man doesn't want anybody to know it. I have always told them, "If you take the treatment and take it long enough I will get you straightened out. But just as sure as you neglect yourself I am going to

have to do something about it. It is not only for your protection but it is for the protection of those around you."

I think it is important for the general practitioner to sit down and explain the condition, what he should do, why he should do it, and why he should keep up his treatment.

Dr. J. M. Northington (Charlotte): Mr. Chairman, I want to express my appreciation for this paper. I used to practice medicine in the same county as Dr. Mickley and I realize what he means by "out in the deep Swamp." I never have heard a better paper in any meeting I have attended. It is good work and well done; and it will be fruitful. I have asked Dr. Mickley to send me a copy of his paper so that I can publish it in the next issue of the Journal. It is worth coming to the meeting to hear that paper, and I think that every practitioner will agree with that statement.

This matter of communicating syphilis innocently is a rare thing, with the exception of kissing. Sometime ago I had the librarian of our rather good medical library see what she could find on the innocent transmission of syphilis. She found an account—which I suppose is a classic—of some place down in Mississippi or Alabama where a farm girl about fifteen or sixteen years old was infected in the usual way, by a generous neighbor boy who knew already that he had syphilis. This girl chewed food and put it into the mouth of a nursing baby, her mother's baby. The baby infected her mother through suckling her and the mother infected the father; and this original member, the girl, infected the brother by giving him chewing gum that she had been chewing.

There is practically no danger of infecting a person through the intermediary of third articles, even drinking after them. The treponema is not a vigorous organism. It has to have its temperature maintained pretty well or it will die. The usual encounter of sexual contact and kissing will account for 99 out of 100 cases, aside from certain perversions which we won't mention.

I enjoyed the paper and it will mean a blessing to his community that Dr. Mickley is doing his work as he is. (Applause.)

Dr. C. W. Durham (Greensboro): Mr. Chairman, I want to ask, what does Dr. Mickley think about the danger of transmitting syphilis through the measles serum?

Dr. John H. Mickley (Tabor City): Did I understand you to say measles serum? I don't believe that in measles serum there would be any danger in transmitting syphilis. The question is rather difficult for me to answer. I am not a laboratory man, but Stokes quotes in his book that treponema have been kept alive as long as 36 days under certain favorable conditions. One of those methods is keeping the treponema in an ice box. I am afraid I can't answer the question as specifically as the doctor would like.

Gentlemen, I don't want to take up any more time as the hour is so late, but there is just one thing I think we all ought to remember. First, we are in the midst of a great campaign against syphilis. Therefore all of us are going to have a tendency to jump on all of the cases with all four feet. We are going to try to do as much as we possibly can.

I am not in favor of such tactics. The case of syphilis in the man who has been a good companion with his disease — I am afraid that we err in trying to do much about his case. Let us remember that we treat the patient always and not the disease. (Applause.)

Chairman Lackey: Gentlemen, I certainly thank you for your kind attention this afternoon. I am sure that every man has enjoyed this program, and I am proud to be Chairman of the program. Any time that I can help any doctor in any way or help the State Medical Society, don't hesitate to call on this Section.

The Section adjourned at 6:20 p.m.

SECTION ON GYNECOLOGY AND OBSTETRICS

TUESDAY AFTERNOON

May 3, 1938

The session convened at 2:10 o'clock, Dr. Bayard Carter presiding, in the Ladies' Card Room of The Carolina, Pinehurst, North Carolina.

Chairman Carter: First of all, I would like to announce the appointment of two committees, the Moore County Award Committee, Dr. W. S. Bradford, Dr. Spicer, and Dr. Paul Johnson. These men will please vote on the best paper given in this Section this afternoon. Our guest speaker, of course, is excluded.

The second committee is the Nominating Committee: Dr. Alexander White, Dr. R. A. Ross, and Dr. W. B. Bradford.

Will those committees please meet before the end of the session and give us a report?

The first paper on the program is by Dr. O. Hunter Jones of Charlotte on the "Pelvic Architecture and Classification." The discussion will be opened by Dr. W. B. Graham of Durham.

Dr. Jones. (Applause.)

Dr. O. Hunter Jones: Mr. Chairman, Members of the Society: It was impossible in a short space of time to adequately cover this subject of pelvic architecture. Those of you who are really interested will find an excellent paper in the Transactions. I can only hit the high spots.

Dr. Jones then presented his prepared paper, illustrating with slides. (Applause.)

PELVIC ARCHITECTURE AND CLASSIFICATION WITH ITS PRACTICAL APPLICATION *

O. Hunter Jones, M.D., Charlotte, N. C.

It is essential to have an adequate knowledge of the architecture of the pelvis in order to practice good obstetrics.

In 1932 Dr. W. E. Caldwell and Dr. H. C. Moloy of the Columbia University Medical School, after a study of the anatomical variations in the pelvic architecture, thought to be caused by racial, sexual, or other complex inherited influences rather than by pathologic changes in the bones themselves, suggested that these variations could be segregated into groups displaying common architectural features which would permit a classification of pelves on the basis of morphology (form and structure).

It was my privilege to be associated with Dr. Caldwell and Dr. Moloy as a member of the House Staff, during a part of the investigative period, and thus have the opportunity to appreciate the value of this work on the pelvis. With this explanation, I am presenting their work to you today not as just another classification of pelves, because in the experience of obstetricians acquainted with this work, the information to be obtained from examination of the individual pelvis according to the routine employed, and the application of the obstetrical principles involved as set forth by these investigators, will give the obstetrician a much better understanding of the architecture of the individual pelvis as well as its correlation to the mechanism of labor. Caldwell and Moloy have shown that if one can accurately describe the pelvic architecture, and this means far more than simply taking the various pelvic measurements, one is better enabled to understand the mechanism of labor with its variations.

Of academic interest is the fact that this classification has simplified and clarified terminology. In addition, it is a descriptive classification.

There have been numerous investigators in the past who have recognized the presence of sexual characters in the female pelvis. I wish that time permitted a discussion of the contribution of each. However, it remained for Caldwell and Moloy, who, after a careful inspection and study of a large series of skeletal remains at the American Museum of Natural History, Smithsonian Institute, Western Reserve University, The Department of Anatomy of Columbia University, and examination of the large amount of clinical material available in The Sloane Hospital for Women (the obstetrical and gynecological department of Columbia), which was studied also by means of X-ray, were able to base their work, essentially on the work particularly of Thomson, Derry, and

* Grateful acknowledgment is hereby made of the generous assistance of Dr. Moloy in the preparation of this paper, and for contributing the lantern slides illustrating the work of Dr. Caldwell and Dr. Moloy.

Strauss, and correlated all of these observations in a manner which permitted the clinical application of sound anatomical deductions.

Now for the classification of the female pelvis, as proposed by Caldwell and Moloy (see plate I):

1. *The Gynecoid Type* (G. gynè-woman)—This is the normal pelvis of other classifications.
2. *The Android Type* (G. andèr-man)—This bears resemblance to the male pelvis. The Masculine and Funnel Type of other classifications.
3. *The Anthropoid Type* (G. Anthropos-man)—This, in a general way, bears a resemblance to the pelvis of the anthropoid apes.
4. *The Platypelloid Type* (G. Platy-flat pellis-pelvis)—Very rare—the simple flat, nonrachitic pelvis of other classifications. By checking clinical findings with X-ray examination, most of the so-called simple flat pelves are found to be android.
5. *The Asymmetrical Type*—Number of cases observed too small to judge the obstetric significance. In addition to asymmetry, the general pelvic shape usually conforms to one of the four types listed above.

In addition the so-called "Assimilation pelvis" of other authors is considered by Caldwell and Moloy as incorrect. They consider it a developmental anomaly and of little obstetric significance.

Frequency of Occurrence in Skeletal Material [1]
(Collection of Pelves at Western Reserve University)

	Female	
	White %	Negro %
Gynecoid type	41.4	42.1
Android type	32.5	15.7
Anthropoid type	23.5	40.5
Platypelloid type	2.6	1.7
Number of cases, female, white		147
Number of cases, female, Negro		121

Before considering the individual pelvic groups it should be explained that the authors have purposely divided the pelvis into an anterior and posterior segment at the widest transverse diameter of the inlet, which point for practical purposes may be considered as being perpendicular to the ischial spines. Each of these segments displays a characteristic shape for the four parent types of pelves. The antero-posterior diameters of each segment are termed the "anterior" and "posterior" sagittal diameters for all levels, and in any individual pelvis the length of each is maintained from inlet to outlet, being modified only by variations in subpubic arch and lower sacral region. Each pelvis is classified as large, average or small.

The Gynecoid Pelvis—

Occurs in women with narrow shoulders and narrow waist line, broad hips and well curved slender legs. Includes all pelvis, large, average, or small whose architectural features are typically female. Round inlet. A lateral view of the pelvis directs attention to the wide sacrosciatic notch—this space will usually admit three fingers on vaginal examination. The sacrospinous ligaments are long. The ischial spines are not very prominent. The sacrum may be straight or show average or marked curvature, and is of average width. The inclination is average (neither forward nor backward).

The side walls (lateral walls of the pelvis) may be either divergent or convergent but usually are straight (parallel). The subpubic angle is average or wide (the great width is in decided contrast to the narrow angle of the android pelvis). The pubic rami are shorter than the android type, and the free edges roll out. The symphysis does not protrude anteriorly as in the android type.

Obstetrical Significance of the Gynecoid Type:

(1) Anterior positions are the rule;

(2) In the small generally contracted form of gynecoid pelvis, which usually occurs in women of small stature, who, as a rule, have small babies, the whole problem is that of engagement—if it occurs vaginal delivery usually follows since relative ampleness exists throughout the true pelvis, but if engagement does not take place cesarean section becomes the method of choice, as relative disproportion exists;

(3) If narrowing of the subpubic angle exists, delay in engagement of the head under the symphysis may take place, and arrest may occur; however, since in the gynecoid pelvis, compensatory space exists in the posterior pelvis, the significance is not great.

The Android Pelvis—

(Anthropologists have great difficulty in determining the sex of the individual when the android pelvis is found in unknown skeletal material.)

Occurs usually in thick-set, short individuals, with a square bodily appearance, and thick, straight legs. "Heartshaped" inlet in contrast to the round inlet of the gynecoid pelvis; this is produced by flattening, or the sacral promontory projecting forward and encroaching on posterior pelvic space—thus here the widest transverse diameter of the inlet is near the sacral promontory. The sacrum is usually wider but straighter than in the gynecoid pelvis. The sacrosciatic notch is long and narrow, and on vaginal examination will admit two fingers usually but rarely three, with a sacrospinous ligament of only moderate length. Clinical recognition of this type of notch and ligament immediately suggests a male type of pelvis. The ischial spines are sharp and prominent. The inclination of the sacrum is forward.

To quote Caldwell and Moloy, "at this point mention may be made of the so-called posterior sagittal diameter (Klien) as stressed by Williams. (Note—not the anterior and posterior sagittal diameters as defined by Caldwell and Moloy—see above.) In the classical type (of android pelvis) this diameter is always shortened if the sacrum has a normal curvature. But this does not hold for all cases. The terminal sacrum is subjected to a great variety of curvatures, so that if this diameter is depended upon, misjudgment of the existing abnormality is bound to occur. A straight sacrum may cause this diameter to reach normal dimensions. In other words, the true index of available posterior space depends upon the conditions existing higher in the pelvis, in the sacrosciatic notch, the inclination of the sacrum, and the length of the posterior iliac portion of the inlet." [2]

Also, "the anterior sagittal diameter (Klien) is really an index to the perpendicular length of the pubic and ischial rami, and, therefore, of little obstetrical significance." [3]

The sidewalls of the pelvis converge, producing a narrow fore pelvis in contrast to the ample fore pelvis of the gynecoid type. Likewise, the subpubic angle is narrow; the pubic rami are long and the free edges are straight, showing no tendency to evert or produce the so-called Norman arch effect, characteristic of the gynecoid type. The increased length of the pubic rami is necessitated by the increased depth of the true pelvis. The symphysis protrudes anteriorly.

Obstetrical Significance of the Android Type—

(1) "This is the most dangerous form of pelvis—encountered. When masculine characters are recognized in the form of a narrow subpubic angle or narrow sacrosciatic notch, the obstetrician must realize that he may be dealing with a generally contracted pelvis. Again, a clinical diagnosis of a simple flat pelvis is not infrequently made and any obstetric difficulty encountered is attributed to the short anteroposterior diameter. It is obvious, in view of the rarity of the typical flat pelvis, that many of these diagnoses are incorrect and that such pelves in all probability are masculine (android) forms." [4]

(2) In the typical android pelvis, engagement occurs in the transverse position and the head maintains this position in its descent through the pelvis (occasionally the sagittal suture may be slightly anterior or posterior to the exact transverse plane but not enough to classify as other than a transverse). It is to be noted that most obstetric authorities still associate "deep transverse arrest of the head" with the posterior position, assuming that it represents an incomplete stage in the process of anterior rotation. From study (including X-ray) of a large series of cases, Caldwell and Moloy definitely associate this condition with the android pelvis in which the mechanism is that of a transverse position from the inlet to the level of arrest.

(3) Normally, in gynecoid or more ample pelvic types, anterior rotation begins when the head has reached the bottom of the posterior pelvis, but in android forms, rotation is prevented at this level by the shape of the pelvis at the inlet, so the head must descend to a much lower level for rotation to occur. Thus it is important to remember that when forceps are used for "deep transverse arrest of the head" the transverse position should be maintained until the head has been brought to the proper level at which rotation can occur, otherwise stillbirth or serious soft part injury to mother and child may occur.

(4) A narrow interspinous (ischial) diameter greatly complicates rotation and descent of the transverse position—associated with the type of pelvis which predisposes to faulty flexion of the fetal head. "A well-flexed head can rotate in any type of pelvis." [5]

(5) Occasionally, after engagement in the transverse position, the prominent sacrum and narrow posterior pelvis force the head into a still narrower anterior pelvis, but in order to utilize the tvailable space it must assume the posterior position which allows the smaller frontal diameter to adapt itself in the narrow anterior pelvis. Since there is a general convergence of the four walls of the pelvis toward the outlet (whence the term funnel pelvis) increasing resistance is met by the head as it descends, and delivery by forceps is very difficult or version and breech extraction equally dangerous. "If the extreme forms of the android pelvis are identified before the onset of labor, elective cesarean section can be sanely advised." [6] It should be added that if a wide subpubic angle is present, this will compensate for the narrow sacrosciatic notch and forward sacrum, and thus improve prognosis.

(6) If an android pelvis has an associated anthropoid tendency in the form of a long narrow fore pelvis, which insures a long anteroposterior diameter in spite of the android posterior pelvis, a posterior position may occur and continue as a persistent occiput posterior, or even deliver as such finally, unless the condition is recognized and rotation brought about. The level of rotation will depend upon the degree of flexion of the head, and upon the shape of the pelvis.

(7) It has been pointed out that labor in pelves with a forward curvature of the lower sacrum is complicated frequently by failure of the cervix to dilate and retract normally—the reason being that the head is unable to descend far enough at the height of each contraction to bring pressure to bear against the dilatable cervix, because of the resistance of the lower sacrum and coccyx. This results in cessation of dilatation, usually with an appreciable rim of cervix around the head.

(8) There is a high incidence of characteristic android forms in the cesarean section and mid forceps group. To further complicate the picture, it has been observed that android pelves are prone to occur in rather characteristic physical types, which are poor subjects for labor, and in addition, the child is often above average weight and may display defi-

nite evidence of post maturity. However, in this connection it should be remembered that the difficulty in labor is not simply one of head size versus pelvic size, but the behavior of the uterus and of the soft parts is a most important factor (to be discussed later). To quote the authors, "this accounts for the observation made by us over and over again that, with the same size of head and same type and degree of pelvic abnormality, one patient may deliver spontaneously while another requires a forceps delivery or even a cesarean section." [7]

The Anthropoid Pelvis—

So named because of the resemblance, in a general way, to the pelvis of the anthropoid apes. Found in women with broad shoulders and narrow hips who have straight but slender legs. Characterized chiefly by an increase in the anteroposterior diameter with an associated decrease in the transverse diameter, producing a long and rather narrow pelvis with a long oval inlet.

The sacrum itself is long and narrow and frequently displays six segments. The promontory of the sacrum is high. The inclination is usually backward in the pelvis, and steep. The sacrosciatic notch is very wide and shallow, and the sacrospinous ligaments are long. The ischial spines are broad and blunt. The side walls are most often divergent or straight. The symphysis is deep and wide. The subpubic angle is characteristically wide. The ischial tuberosities are broad. Pelvic capacity anteriorly is decreased, due to the decreased width of pelvis, but this is in decided contrast to the posterior pelvis, where the widest transverse diameter is placed considerably in advance of the sacral promontory.

The Obstetrical Significance of the Anthropoid Pelvis—

(1) The head may be found unengaged at term. Engagement occurs in the anteroposterior diameter; since the anterior pelvic inlet is narrowed and compensation exists in the posterior pelvis engagement as occiput posterior occurs more often than in any other type, while direct occipitoanterior positions as well as anterior oblique positions frequently occur. Usually a small baby will come through. However, rotation of the head can be expected to cause difficulty so that if this type of pelvis is recognized, it may be found that delivery can be effected with greater ease by delivery of the head with forceps as a persistent occiput posterior. "It is mechanically wrong to attempt the rotation of the fetal head from a wide diameter through a narrower one." [8]

If a wide outlet is present, rotation may be accomplished manually but if difficulty occurs it is advisable to deliver the head in the posterior position.

(2) In version and breech extraction, delivery of the after coming

head should be guided by the same principle just stated, for if it is allowed to enter the pelvis in the transverse position, the head may be arrested in the narrowed transverse—thus if possible the head should be rotated to a posterior or anterior position in the inlet.

(3) "In the extreme forms, particularly when narrowing of the subpubic angle exists, the head fails to engage and cesarean section becomes the usual method of delivery." [9]

The Platypelloid Pelvis—

Observed in only a few instances in X-ray examination of a large series of living women. It is the direct opposite of the anthropoid type, as regards shape, the anteroposterior diameter being greatly shortened and the transverse diameter greatly lengthened.

The widest transverse diameter of the pelvis is situated nearer the midpoint than in either of the other three pelvic types, due to the flattening of both anterior and posterior pelvis. The sacrosciatic notch conforms to the female type but may appear somewhat narrow. Variations in the subpubic angle, as in all types, may range from narrow to wide.

The Obstetrical Significance of the Platypelloid Pelvis—

(1) Engagement of the fetal head has to take place in the transverse diameter because this diameter is the most ample diameter throughout the pelvis (unless the presence of a narrow subpubic angle with ischial spines that encroach on midpelvic space), and the head should be allowed to descend in this diameter to the pelvic floor, where, if forceps become necessary, rotation should not be attempted until the caput is right at the outlet.

"The reason is obvious. Unless the occiput can escape into the outlet, the long diameter of the fetal head will be forced to occupy a narrow anteroposterior diameter between the unyielding symphysis in front and the sacrum behind." (Two possible injurious results may follow, fetal intracranial injury, or separation of the symphysis.)[10]

The True Types of the four groups of pelves described so far are not hard to recognize, with a little experience. However, the intermediate forms, by which is meant the presence of characters in the pelvic architecture which do not conform, typically, to that particular parent type, may be quite hard to recognize. It is in these mixed types that X-ray examination is so valuable.

The Mixed Types—

The inlet is classified according to the shape of the posterior segment. Each true pelvic type has a corresponding typical fore pelvis associated with it. An intermingling of types occurs when a posterior segment of one of the four parent types becomes associated with the fore pelvis of another. This intermingling, according to the authors, is due

to the fact that the pelvic girdle develops from seven distinct bone elements and any one element may unexpectedly display a radical departure in shape from the ampleness characteristic of the typical female form, i.e., a pelvis may show a masculine posterior pelvis and a gynecoid fore pelvis—this is a mixed type and is classified as "Android pelvis with a Gynecoid tendency." Likewise, when a significant departure from the ampleness in the lower pelvis is present such as a narrow subpubic angle, or forward sacrum or convergence of the side walls, each feature must be added separately in order to accurately classify the individual pelvis. At times it may be desirable to attach a descriptive term to the pelvic type, i.e., gynecoid pelvis with a narrow subpubic angle.

So, the complete classification as checked by X-ray, in a series of 215 primigravid women admitted consecutively to the antepartum clinic of the Sloane Hospital for Women, revealed the following:[11]

(See Plate I.)

Classification	No. of Cases	Incidence Per Cent
1. True Gynecoid type	85	39.5
2. Gynecoid type with flat tendency	7	3.3
3. Gynecoid type with narrow fore pelvis	24	11.1
4. Gynecoid type with anthropoid tendency	10	4.6
	126	58.5

Classification	No. of Cases	Incidence Per Cent
5. True Android type	25	11.6
6. Android type with flat tendency	4	1.8
7. Android type with gynecoid tendency	11	5.1
8. Android type with anthropoid tendency	8	3.7
	48	22.2
9. True Anthropoid type	25	11.6
10. Anthropoid type with gynecoid tendency	14	6.5
	39	18.1
11. True Platypelloid type	2	0.9
12. Asymmetrical forms	4	....

The authors ask this question, "Is it not possible that two great influences may be at work, one the arrest in evolution from the ape form,

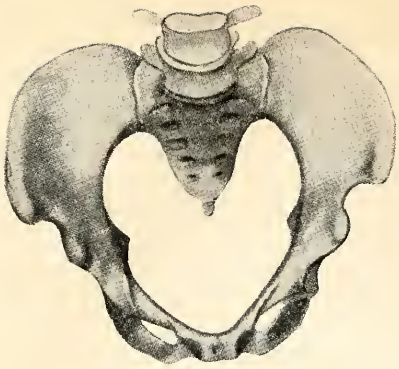


Fig. 1

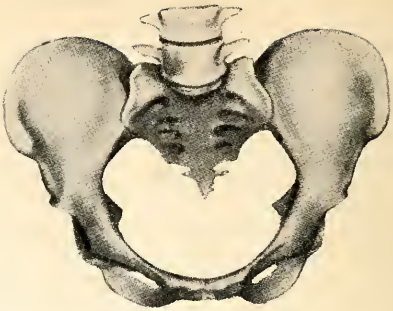


Fig. 2

Fig. 1.—*The true anthropoid type of pelvis (parent type).*

Note the long oval inlet. The anteroposterior diameter is long, the transverse is narrow. Study particularly the shape of the anterior segment (long and narrow) and posterior segment. In this pelvis the anthropoid influence predominates.

Fig. 2.—*The anthropoid type with gynecoid tendency (mixed type).*

The pelvis is wider and shorter than the true anthropoid and in general appearance is a long broad oval. The posterior segment is anthropoid, the anterior segment more gynecoid in form.

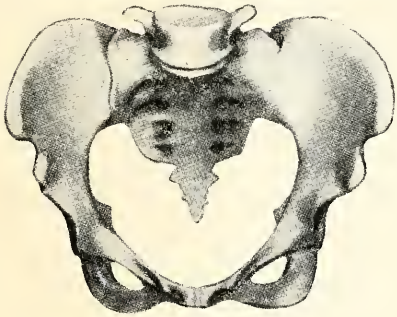


Fig. 3

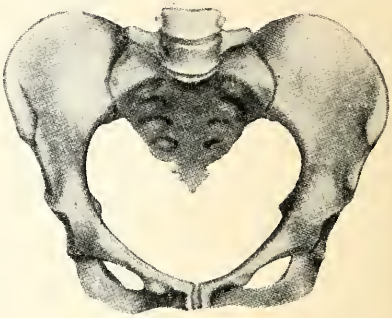


Fig. 4

Fig. 3.—*The gynecoid type with anthropoid tendency (mixed type).*

The posterior segment is gynecoid, the transverse diameter being closer to the promontory. The long, oval appearance is caused by the long, narrowed fore pelvis.

Fig. 4.—*The gynecoid type with a narrow fore pelvis (mixed type).*

This pelvis is practically normal. The narrow fore pelvis is evidence of a weak anthropoid or male influence.

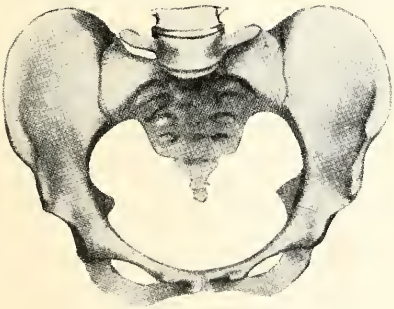


Fig. 5

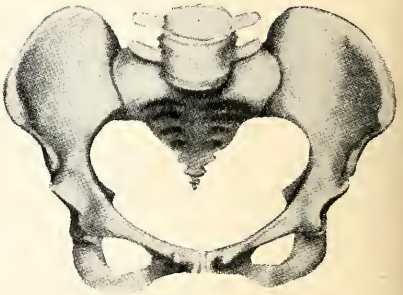


Fig. 6

Fig. 5.—*The true gynecoid pelvis (parent type).*

In the development cycle this inlet is round and typically female in all portions. The female influence predominates.

Fig. 6.—*The gynecoid type with a flat tendency (mixed type).*

Note that the pelvis is wider and flatter, indicating a trend toward the true flat type.

Plate I-18. *(Courtesy of the author.)*

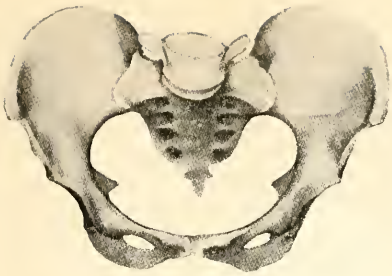


Fig. 7

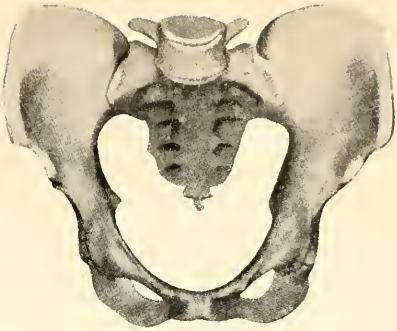


Fig 8

Fig. 7.—*The flat (platypelloid) type (parent type).*
The wide transverse and short anteroposterior diameter are the salient characteristics.
Fig. 8.—*The android type with anthropoid tendency (mixed type).*
The posterior segment conforms to the male type. The long oval appearance is caused by the long narrow fore pelvis. This places it also in the anthropoid class.

Fig. 9

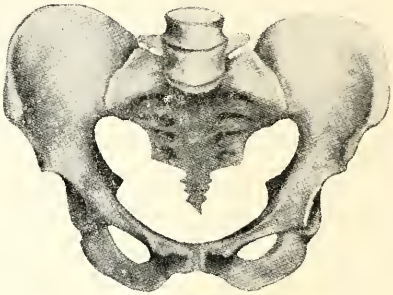


Fig. 10

Fig. 9.—*The android type with gynecoid tendency (mixed type).*
The flat masculine posterior segment is characteristic and defines the pelvic type. The fore pelvis is gynecoid, similar to the fore pelvis seen in Fig. 5.
Fig. 10.—*The true android type (parent type).*
Note the flat male posterior segment, the narrow anterior segment, the forward sacrum and converging side walls. This pelvis approaches very closely the shape of the average male.

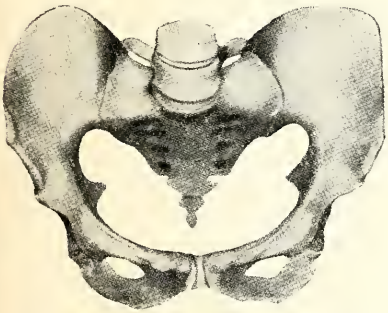


Fig. 11

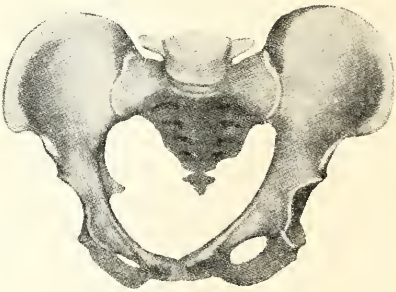


Fig. 12

Fig. 11.—*The android type with flat tendency (mixed type).*
Although a male posterior pelvis is present, the general form is broad and flat.
Fig. 12.—*The asymmetrical type.*
The asymmetry is limited to the right side. The sacrosciatic notch is narrower on that side and the iliopectineal line is straighter.

(Courtesy of the Authors)

the true Anthropoid, to the perfect human form which is characteristically flat, and the other, a sexual or hormonal factor which may determine certain masculine characters in the female form?" [12]

As to importance of the hormonal influence, they cite the recognition of the extreme pelvic types in endocrine clinics in subjects suffering from an endocrine disturbance, whereas they are not commonly found on the obstetrical wards, although, they do occur and increase markedly the incidence of operative deliveries.

Engagement of the Fetal Head:

Engagement of the fetal in relation to the various types of pelves has already been discussed. Whether the head engages in the oblique diameter or transverse diameter has been a disputed point for years. Most authorities have believed that transverse positions represent a passing stage in the act of anterior rotation from an original occipito-posterior. In a series of 200 unselected cases, X-rayed routinely, Caldwell and Moloy found the following:

	Gynecoid	Android	Anthropoid	Combined
Posterior position (posterior oblique)	10	20.5	28.5	18.5
Transverse position	69	71.0	37.5	60.0
Anterior position (anterior oblique)	20	8.5	17.0	16.0
Direct occipito (anterior position)	1	.....	17.0	5.5

Analyzed: Original transverse position in the gynecoid and android types occur in approximately 70 per cent of the cases; an increase in the number of posterior positions and a decrease in anterior positions in the android types (probably due to the characteristically narrow fore pelvis of this type); in the anthropoid type a decided increase in the number of posterior and anterior positions with a great decrease in the transverse positions (in the typical anthropoid pelvis a transverse position will result in a tranverse arrest unless the baby is small); a direct occipito posterior position was not observed in this series—probably due to the prominence of the maternal lumbosacral region; LOT occurred twice as often as ROT, LOA only slightly more than ROA, and LOP and RoP about the same number of times.

It should be borne in mind that the position of the head after engagement has occurred may be quite different from the position which existed before the onset of labor—the latter is not necessarily determined by the shape of the pelvis; "when the head is not deeply engaged, certain factors in the soft parts, which cannot always be determined in the individual case, influence the position. Such factors may be the shape

or obliquity of the uterus, the position of the placenta, or even the length of the cord."

Practical Suggestions to Assist in the Clinical Recognition of the Pelvic Types (after Caldwell and Moloy):

(1) Lithotomy position—

(2) Observe the slope of the perineum—varies from a position perpendicular to the horizontal to the other extreme in which the inclination forms an acute angle with the floor. The average inclination is somewhere between these extremes.

The extreme android forms show an acute inclination, and tuberosities of the ischium protruding well in front of the symphysis producing a marked perineal slope. The cause exists in the inclination of the inlet. The top of the symphysis and the promontory of the sacrum tend to approach the same plane.

The anthropoid types show a perineum which is perpendicular to the horizontal. The symphysis and tuberosities approach the same perpendicular plane, due to the inclination of the inlet. The promontory is at a high level in respect to the top of the symphysis.

(3) Subpubic angle—

Palpation of the subpubic angle will reveal it to be wide, moderately wide or narrow. Norman arch effect infers ampleness. Straight Rami of the android type will grip the examining fingers.

Remember, although a narrow subpubic angle is present, the intertuberous diameter (transverse of the outlet) may be normal.

(4) Intertuberous diameter—

Should be palpated deep posteriorly to avoid an erroneous measurement.

(5) Symphysis—

Width increased in android forms particularly, i.e., 7 cm. or more—frequently caused by taut wide subpubic ligament and by the strong ligaments stretching between prominent pubic tubercles rather than by an increase in bony width.

(6) Fore Pelvis—("angle of the fore pelvis")—between the superior rami of the pubes.

This may be accurately estimated by turning the examining fingers anteriorly on either side of the urethra. Also bimanually, the external hand starting at the anterior spine and following the superior border of the pelvis around to the symphysis, in connection with the palpating fingers on the inside.

(7) Side Walls (of the true pelvis)—

Are parallel, diverge or converge.

Palpated with two fingers of the examining hand reaching over to the lateral pelvis and following the walls back to region of the ischial spines.

The examination so far will reveal the type of *anterior pelvis.* Even if marked male characters have been noted compensatory space may exist in the *posterior pelvis,* thus the obstetrician must carefully note all these points, aided by X-ray examination, if necessary, before he can accurately suggest the correct obstetric prognosis.

Vaginal, and at times rectal examination, reveal the capacity of the *posterior pelvis:*

(1) The Ischial Spines—

Palpate to determine if sharp or blunt, and if there is encroachment upon pelvic space.

(2) Sacrospinous ligaments—

Palpate from spine to lower lateral border of sacrum. This ligament bridges across the sacrosciatic notch which normally admits three fingers, but only two fingers or less in the android type of notch.

(3) Coccyx and Sacrum—

Determine if coccyx is situated normally and is movable; if sacrum has a normal curvature, or if it is straight and flares backward; finally, if promontory can be reached.

X-ray:

Mention has been made of the important part played by X-ray examination in the study of pelvic architecture. The ordinary stereoscope found in every X-ray office, may be used for viewing the films (stereoroentgenograms) but a stereoscope known as the precision stereoscope is superior in every respect since distortion in the size and shape of the image is corrected. By the obstetrician is able to visualize clearly, and to type, the maternal pelvis, and, at term or during labor, to visualize the presenting part and the maternal pelvis bearing the same size, shape and relationship to each other as would be observed by one's own eyes approximately ten inches perpendicularly above the pelvis.

As expressed by the authors, information of greater importance than the actual measurements, either linear or volumetric, is gained by a study of the pelvis, or of the fetal-pelvic relationship, under stereoscopic vision. One learns to judge the ampleness in both size and shape from viewing many films. Thus the obstetrician is able to correlate what he sees (X-ray) with what he finds upon vaginal examination. The obstetrician himself should always view the films and form his own opinion rather than just take the word of the roentgenologist, because he alone, not the roentgenologist, knows the clinical findings by vaginal, rectal, or abdominal examination.

With the precision stereoscope accurate measurements (X-ray pelvimetry) may be taken, if such are desired. This is done by measuring the image in space.

As regards the routine X-ray procedure, anteroposterior stereoroentgenograms obtained with patient in the supine position, using a thick

lumbo-sacral pad, and a large lateral film are taken. I shall not go further into the technique employed, as this is of interest only to the roentgenologist.

As to when to X-ray, it is sufficient to say that in any case of a typical labor, where operative interference is being considered, it is the part of wisdom to get an X-ray examination with immediate interpretation of the films before resorting to such interference.

The Mechanism of Labor and the Role of the Lower Uterine Soft Parts in Labor:

In the discussion so far only the architecture of the bony pelvis has been considered. In the past two-three years Dr. Caldwell and Dr. Moloy aided by Dr. Anthony D'Esopo, of the same institution, have been studying, in particular, the mechanism of labor and the associated role of the lower uterine soft parts—the latter demonstrated by outlining the lower uterine segment with a 6 per cent sterile sodium iodide solution which infiltrates upward between the membranes and the lower wall of the uterus, and which is held under pressure in the vagina at the time roentgenograms are obtained. (See Plate II.) This study has resulted in the following observations:

(1) When the pelvis is normal and the child of average size, it is doubtful if the bony pelvis plays the significant role in the mechanism of labor. The perfection of natural labor is attained by the soft parts of the birth canal directing the fetus at each level along the optimum anatomical axis of the pelvis and through the most ample diameters. In other words, the lower uterine segment and its fascial supports represent an active force in determining the axis along which the fetal head must descend through the pelvis.

(2) In normal labor, the axis of the lower uterine segment causes the head normally to follow an axis in the posterior part of the pelvis in relation to the sacral curve, where there is more available space. This control exerted by both the lower uterine segment and its supporting structures (bony and fascial structures, including the bladder, particularly anteriorly, because there is greater distance between the symphysis posteriorly and the anterior portion of the dilating uterocervical junction than there is between the sacrum and the posterior aspect of the uterocervical junction) may be called the "guiding" or "directing" influence. Simultaneously, it causes flexion and molding of the fetal head, the degree, to a certain extent, depending on whether the membranes are intact or ruptured.

(3) The fetal head presents at the inlet, conforming to a posterior parietal tendency, as an anterior position, or posterior position, or most commonly as a transverse position (an extreme posterior parietal position at the inlet is rare, and an extreme anterior parietal position is so rare as to be considered an obstetrical curiosity). The uterine thrust with each contraction, directs the head downward and forward toward

the fore pelvis meeting the resistance of the lower anterior uterus, strong fascial support, bladder and more remotely the bony symphysis, but as labor progresses and the cervix dilates, the head is slowly moved away from the region of the symphysis toward the mid and posterior pelvis, by a movement known as "posterior lateral flexion" (by this movement an original posterior parietal position squares itself into the inlet by fixation of the head against the promontory or upper sacral regions posteriorly as the anterior parietal descends behind the symphysis [15]), and thus, at a certain level in the upper mid pelvis, as the head

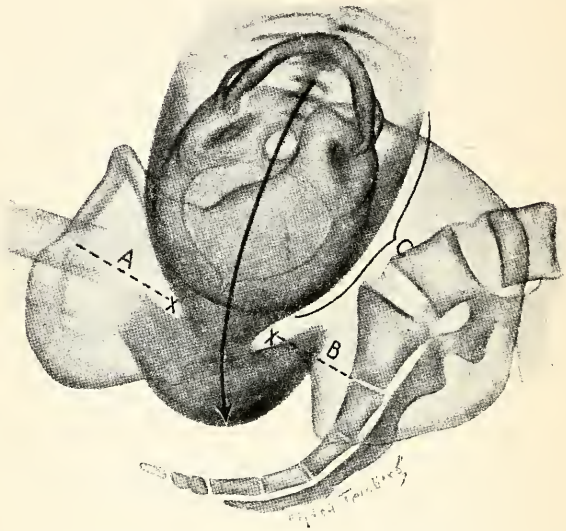


Fig. 1.—The lower uterine segment is outlined by 6 per cent sodium iodide which has infiltrated upward between the membranes and the lower wall of the uterus. Note the slight downward and backward axis of descent. Varations in the position of the axis of the lower uterine segment will result from differences in the lengths (*A* and *B*), strength, or character of the fascial supports originating from the utero-cervical junction at "*X*." the upper portion of the lower uterine segment "*C*" is freely adaptable to any particular fetal or uterine axis, and is flexible enough to allow fetal-pelvic adaptation to pelvic type at the inlet.
Plate II-[19]. (*Courtesy of the Authors*)

is brought more and more under the influence of the normal tenseness of the lower uterine segment and cervix, it is gradually directed downward and backward toward the bottom of the posterior pelvis and close to the sacrum in the axis of the posterior pelvis, and the position of the fetal head changes to that of an anterior parietal one. Notice that at this stage the heads avoids the fore pelvis and continues to do so until it meets the resistance offered by the platform of the ischial spines and the lower sacrum and coccyx (the "three point landing"). Usually, at this level, the cervix has attained almost complete dilatation, and since the posterior bony pelvis, just described, prevents further descent of the head posteriorly, it begins rotation from the transverse or posterior position, as the case may be, into the muscular gutter of the pelvic floor, and by

a movement termed "anterior lateral flexion," the head descends forward into the axis of the fore pelvis and onto the perineum. (See Plate III.)

"Anterior lateral flexion is the movement imparted to the head by the cephalic application of forceps, even before any traction is attempted, as the posterior blade of the forceps cannot avoid angulating the long axis of the head away from the low posterior pelvis into the fore pelvis." [16]

Actually, when the caput is bulging the perineum at the height of a contraction, the head may recede upward to the low mid pelvis between

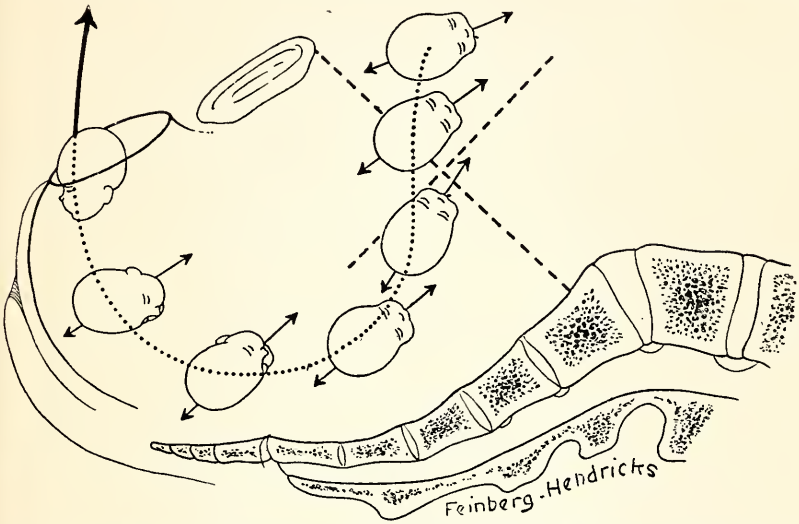


Fig. 23.—Diagrammatic representation of the axis of descent as revealed by this investigation. A line joining similar points on the series of fetal heads reveals general character of the curved axis. Note the angular relationship between the fetal axis and the perpendicular axis of the pelvis, and the difficulty of anatomically associating the relation of head to pelvis at any given level. The fetal piston moves upward and downward in a straight line with each contraction. Note relationship of its position to the static pelvis at the following levels: (1) During engagement from a posterior parietal position at the inlet. (2) At low level in posterior pelvis (see Fig. 24, *C. D.* (3) Shift forward with descent along inclined plane of out et. (4) On perineum to distend it by straight drives downward in axis of fore pelvis.
Plate III-[20]. (*Courtesy of the Authors*)

contractions. Hodge and others have noticed that the head descends until the biparietal diameter is opposite the intertuberous diameter of the pelvis before extension occurs—coincident with this the occiput has partially passed through the subpubic arch.

Understanding of this mechanism explains the principle well known to every obstetrician, of elevating the handle of the forceps only after the caput is well showing. In other words, traction must be made in the axis of the fore pelvis to cause the head to descend downward and forward, even partially through the subpubic arch, before the act of extension is encouraged.

A study on the part of the authors of many X-ray examinations of normal and abnormal labor has enabled them to conclude that:[17]

(1) Apparently, the axis of the lower uterine segment does not always correspond to the optimum axis of the pelvic canal. The position of this axis is variable in each individual case. Descent may occur through the fore pelvis, the mid pelvis, or the posterior pelvis. For example, even with a normal pelvis with normal inclination, and a child of average size, the head may be directed into and descend through the fore pelvis, not following the usual axis as outlined above, etc. Finally, only a trial of active labor will determine in which direction it will go.

(2) The clinical course of labor and the head position in relation to pelvic type is distinctly modified, depending on the particular axis the head follows.

(3) The maximum guiding influence of the lower uterine segment becomes evident only after definite dilatation of the cervix has occurred.

(4) These variations in labor in the fetal axis of descent, will probably, ultimately, enable the obstetrician to understand the question of inertia and cervical dystocia, and the correct method of treatment for these conditions.

(5) A knowledge of the possible occurrence of these variations in any individual case in labor is essential before a reliable clinical and roentgenologic diagnosis can be made.

(6) In the majority of instances, roentgenologic diagnosis cannot be made dogmatically during labor, because only the active forces of labor can ultimately determine the axis through which the head can descend. The later the examination is taken, the greater the possibility of accurately determining the axis the head is attempting to follow.

(7) Patients who are not progressing normally in labor warrant a careful examination in order to determine, among other things, if the head is descending in the proper relation to the symphysis in front or the sacrum behind.

(8) The variability of the fetal axis of descent with its resultant effect on the mechanism of labor indicates that difficulty in labor cannot be anticipated by linear or volumetric measurements alone.

(9) The mechanism of labor in relation to the shape of the pelvis cannot be adequately discussed without taking into account the variations in the position of the axis of the lower uterine segment, along which the head descends.

Conclusions:

I believe that the classification of pelves as proposed by Caldwell and Moloy will become universal, replacing the others now accepted as standard.

Their work has been and will continue to be, greatly responsible for making obstetrics less of a mystery and more of a scientific art.

In my experience the chief value of the work of Dr. Caldwell and Dr. Moloy on pelvic architecture and classification and the mechanism of labor, has been its practical application. In other words, to practice good obstetrics one has to know pelvic architecture.

Today the obstetrician is frequently blamed for interfering too often and too much with the natural process of labor. Undoubtedly, a certain amount of this criticism is justified. The terms "bad pelvis," "disproportion," "large baby," etc., are loosely used at times as justification for major operative interference, including cesarean section, when, if the truth were known, one would find the problem at hand to be inadequate obstetrical knowledge—and more particularly inadequate knowledge of pelvic architecture and the correlated mechanism of labor.

On the other hand, the policy of always leaving "Nature to take her course" is equally as bad—this puts the doctor in the midwife class. Often both extremes mean poor obstetrics, which in turn may result in fetal, and maternal, morbidity, and mortality.

No claim is made that every obsterical patient should have a complete X-ray series, perhaps repeated at intervals during labor, but there are cases who deserve this and are entitled to it—I refer to the case of a typical or difficult labor.

Certainly those cases of previous stillbirth, or of prolonged and difficult labor with fetal injury, deserve a most careful work up. Those practitioners who realize that their knowledge of pelvic architecture is inadequate should never hesitate to seek competent consultation in such cases.

Every obstetrician can do (and will do, if a conscientious practitioner) a thorough routine antepartum vaginal examination. He can ascertain more about the pelvis than merely one or two measurements. It seems to me, employment of such a routine vaginal examination as outlined in this paper, will necessarily result in a more thorough understanding of the pelvic architecture present as well as the mechanism of labor to be expected.

While speaking of X-ray, the practice of taking only an anteroposterior film but never stereoroentgenograms, or lateral exposures in cases of border-line pelves, and making important obstetrical decisions from it, i.e., whether to do a cesarean section, is mentioned only to be condemned. Surely, with the technique now available there is no excuse for lack of stereo films.

In closing, I am reminded of the following remark made one day by Dr. Caldwell, "the termination of pregnancy by cesarean section at times may be the easiest way out for the obstetrician. But, much more satisfaction could be derived by the obstetrician, in some of these cases, if he possessed a sufficient knowledge of the pelvic architecture involved with its correlation to the mechanism of labor, to intelligently follow labor through to a successful termination for both mother and child.

[1] Caldwell, W. E., and Moloy, H. C.: Am. J. Obst. and Gynec., Vol. 26, No. 4, P. 479, October 1933.
[2] Same as (1).
[3] Caldwell, W. E., Moloy, H. C., and D'Esopo, D. Anthony: Am. J. Obst. and Gynec., Vol. 30, No. 6, P. 763, December 1935.
[4] Same as (1).
[5] Same as (3).
[6] Same as (1).
[7] Same as (3).
[8] Same as (1).
[9] Same as (1).
[10] Same as (1).
[11] Caldwell, W. E., Moloy, H. C., and D'Esopo, D. Anthony: Am. J. Obst. and Gynec., Vol. 28, No. 4, P. 482, October 1934.
[12] Same as (1).
[13] Caldwell, W. E., Moloy, H. C., and D'Esopo, D. Anthony: Am. J. Obst. and Gynec., Vol. 28, No. 6, P. 824, December 1934.
[14] Same as (3).
[15] Same as (3).
[16] Same as (3).
[17] Caldwell, W. E., Moloy, H. C., and D'Esopo, D. Anthony: Am. J. Obst. and Gynec., Vol. 32, No. 5, P. 727, November 1936.
[18] Plate I, Same as (11), Pages 4 and 5.
[19] Plate II, Same as (17), Page 5.
[20] Plate III, Same as (3), Page 25.

Chairman Carter: The discussion on Dr. Jones' paper will be opened by Dr. W. B. Graham of Durham.

Dr. W. B. Graham then presented his prepared discussion on Dr. Jones' paper. (Applause.)

Dr. W. B. Graham: I enjoyed reading Dr. Jones' paper, and I also enjoyed seeing the slides he has shown.

In order to practice good obstetrics it is essential to have, as near as possible, an adequate knowledge, not only of the architecture of the pelvis as well as the capacity of the particular pelvis, but also we must know the size of the baby and, most important of all, the quality of the pains, as well as what active force the lower uterine segment and its fascial support may exert in determining the axis along which the fetal head must descend through the pelvis.

The recent contributions of Caldwell and Moloy, as presented by Dr. Jones, show that much useful information can be gained by studying the morphology of the pelvis as a whole in a purely descriptive qualitative way. The importance of quantitative methods are not lessened, however, by such an approach to the study of the subject. On the contrary it increases the practical value of the pelvic measurements by providing a more scientific basis for pelvimetry. Conversely methods of precision simplify and increase the usefulness of morpholigic classifications.

The detailed description of the five types of pelves proposed for classification together with the obstetrical significance of each type as pointed out by Dr. Jones, have done much to perfect our knowledge of pelvic architecture, especially in its relation to the course of labor. The present paper helps to emphasize again the advantages of applying this newer knowledge to practical obstetrics as well as assembling the most practical methods available for the measurements of the important classical diameters of the pelvis. It also presents the importance of possessing informa-

tion regarding the dimensions of the pelvis which must have no doubt as to its accuracy.

The work of Dr. Schuman has done much to clarify the accuracy of measurements of the pelvic diameters. By measuring a series of pelves directly through an abdominal incision in patients subjected to laparotomy, he determined the length of the anteroposterior and greatest transverse diameter of the inlet by the use of a Delee pelvimeter. A group of the foregoing patients were later subjected to measurements by the technique of Thoms in order to determine the accuracy of roentgen measurements. It was gratifying to learn that the diameters of the inlet as determined by direct intra-abdominal measurements corresponded in every instance with those obtained by the roentgen technique, the variation being constantly less than 2 mm. The external pelvimetry, which was also carefully performed in all of the patients, is noteworthy by the fact that the figures so obtained bear little or no relation to the actual size of the pelvic inlet. This was true of all the external diameters but particularly impressive was the external conjugate, which varied within wide limits from the true conjugate.

It would thus seem that external pelvimetry must be more and more disregarded as a means of obstetric diagnosis, because the gross errors involved may well lead the inexperienced obstetrician into a false sense of security when severe pelvic contraction may actually exist. I hasten to deplore, however, the tendency of young obstetricians to rely too much on the X-ray. No doubt it adds to the scientific management of a case, but unless fully understood and correctly added to knowledge gained by physical examination, the X-ray plate, and even steroplates, may lead us astray. To perform cesarean section on the indications furnished by roentgenography alone is usually bad practice. Thus, as pointed out by Dr. Jones, the obstetrician himself should always view the films and form his own opinion rather than just rely on the word of the roentgenologist, because the obstetrician alone knows the clinical findings by vaginal, rectal and abdominal examinations. He also realizes that pelvic measurements must be considered in conjunction with all other factors when giving a prognosis as to the outcome of labor, i.e., the size of the fetal head, general build of the patient, age of the patient, mobility of pelvic joints, presentation, course of progressing labor, force of uterine contraction, fortitude of the patient, type of pelvis, and the molding of the head.

By combining clinical experience with a particular type of pelvis as described in the classification we know that certain obstetrical patients do not need a complete X-ray series, however, I feel that roentgenometry of the Thoms technique should form a part of the prenatal examination, when feasible, of every primiparous woman, and suggest that all doubtful cases of disproportion necessitate roentgenologic study. This is especially important in the android group.

I have had no actual experience in studying the mechanism of labor by the method the author described. However, I would like to call attention to certain commonly observed facts, as pointed out by Aldridge, which seem to suggest that it is almost impossible, during labor, for the fascial support of the uterus so to fix the position of the lower uterine segment in the anteroposterior diameter of the pelvis, as to constitute an important factor in directing the course of the fetal head. From the anatomical standpoint, it is generally agreed that the uterus is supported by a layer of endopelvic fascia referred to as the upper pelvic floor. In the base of each broad ligament this fascia is thickened to form the so-called cardinal ligaments which are attached to the uterus at the level of the internal os. These ligaments extend laterally and provide the chief support of the uterus. That portion of the endopelvic fascia extending between the uterus and the inner surface of the anterior border of the pelvis is looked upon as the weak portion. Posteriorly the upper pelvic floor is composed of a layer of endopelvic fascia and the anterosacral ligaments.

As the cervix dilates at the level of the internal os during labor, it is obvious that the fascial supports of the uterus which are attached at this level must relax, allowing increasing mobility of the lower uterine segment. When the cervix has reached full dilatation, it practically lines the true pelvis, causing complete relaxation in every direction of all the fascial supports of the uterus, allowing great mobility of the lower uterine segment. In view of these facts it seems doubtful if the lower uterine segment remains sufficiently fixed in position, as labor progresses, to constitute an important factor in directing the course of the fetal head.

Chairman Carter: Dr. Jones's paper is now open for general discussion. We say at the start that the papers will be limited to from fifteen to twenty minutes except for our guest speaker. We will ask the formal discusser to limit his remarks to five minutes, and any general discussers to make their remarks as briefly as possible. We are thirty-five minutes late as it is.

Is there any discussion of Dr. Jones' paper?

If there is no discussion, we will go to our next paper. The next paper is by our guest speaker, Dr. Lester A. Wilson, Professor of Obstetrics and Gynecology at the Charleston Medical College. The subject is "Late Puerperal Complications and Care." (Applause.)

Dr. Lester A. Wilson: Mr. Chairman, Ladies and Gentlemen: Whenever I have to give a paper before my friend, Oren Moore, it always increases my inferiority complex, because he is such a delightful speaker and his flow of language is so nice—I don't have that and it makes me feel badly.

I want to apologize for leading you astray a little bit, perhaps, by the title of this paper. I say the "Late complications" of the puerperium.

We have a general impression of what happens to our patients, but I wanted to study the outlook over my records and find out definitely, so I have listed them here and will talk to you about them, emphasizing the late complications.

Dr. Wilson then presented his prepared paper, making the following interpolations:

(1) Before the classification "forceps . . . 103" in chart Number 1: I would like to say: I am not bragging about it, but you know the high mortality of twins—only one twin, one baby, was lost out of sixteen children.

(2) After the classification, "Cesarean . . . 21," in the same chart: Many of those were cases that I got hold of that were second sections, perhaps a fairly high percentage, that is, 2.1 per cent.

Labor induced—I think this is an interesting point: Sixty-two cases out of the thousand were toxic, giving us six per cent, or one in about twelve or fifteen women who became toxic during pregnancy. That is the usual run, then, you might assume. One in every fifteen approximately had to be induced because of toxemia of pregnancy.

I do want to bring out also that practically none of these patients had eclampsia. I did not have a case of eclampsia in this series of cases, with this exception: One patient had two convulsions while I was inducing her for toxemia.

Our gross maternal mortality was one-tenth of one per cent, the gross mortality of infants 26, or 2.6. Six of these babies were deformed. There are one or two lessons that we might learn from that, if I might digress for just a moment.

Two of those were frogheads or anencephalus. One of them, however, was of interest. The lesson to be learned is that you can't tell the cause of infant mortality. Don't blame the obstetrician until you have an autopsy. That is the only we can tell just what is going on with our infant rate until we study them out. One of the cases that I have in mind was a perfectly normal appearing baby which never would breathe. On examining its heart, keeping it alive for an hour or two by artificial respiration, I noted the heart was on the right side. I thought of a transposition of the viscera and decided it would be nice to get an autopsy, did so, and found a total absence of diaphragm, and one lung, with the heart pressing over on the opposite side.

I mention that to emphasize the importance of autopsies before the pediatrician blames us for all deaths.

There is one other point there that is of interest: One of these cases was a hermaphrodite, and I made the mistake of telling the family that it was a boy or girl—I have forgotten which I told them now. After I went home I went back to the office and read up on the subject very carefully, and decided that whatever I had told them was probably wrong, it wasn't a boy, but it was a girl—just the opposite of what I had told them.

God was good to me, good to the baby. It developed some other abnormality, probably some other deformity, and died, so I got out of my dilemma very easily that time.

(Chart 2): In these four cases, there was one case of placenta previa, probably a low percentage because of the fact that these toxemias were induced before they had time to become acute.

We had fifteen cases of postpartum hemorrhage, two cases of delayed postpartum hemorrhage, which I have found are always serious. We had two in this series.

(Chart 3): In the study of these patients at the eighth week of gestation I found the cervix lacerated in 57 per cent of the cases, cervicitis in 103, or 10.3, subinvolution in 82, malposition of the uterus in 102, congestion or infection of the uterus and adnexa in 112. I found phlegmasia alba dolens in none of the cases in this series. I mention that on purpose.

Phlebitis of the pelvic veins, I am frank to admit, I think occurred much more than I diagnosed. It is a difficult diagnosis to make, I think, and I have learned to regard it always as a possibility. This case helped me in that, perhaps, because she died. She developed an embolism, a clot broke off, was washed up in the lungs, pulmonary thrombosis occurred and she died. I will speak about that later.

(3) Before Chart No. 3: The laceration in the upper part of the perineum will be 1 plus on down to a 4 plus laceration into the rectum. I apologize for using that. I have no desire to change the nomenclature, but I found that the old three degrees did not keep the record going right.

(Slide): On the same subject, these lacerations, whether they came out on the surface or whether they were in the mucous membrane surface in the vagina made no difference to me. I went according to the muscle as far as I could.

(Slide): I made a study of these women in the eighth week postpartum, the time of delivery as against the eighth week postpartum. There were 110 first degree lacerations at labor, 146 second degree, 35 third degree or 3 plus and one 4 plus laceration. In the eighth week postpartum there were 56 cases with 1 plus lacerations, 40 cases with 2 plus, 12 with 3 plus and none with 4 plus lacerations.

In this series there were 67 cases of episiotomies. I want to call your attention to a study about episiotomies at the eighth week postpartum. We are led to believe sometimes that episiotomies are a perfect plan of treatment. They have not been in my hands, and I accept the responsibility perhaps of not being so perfect. Anyway, at the eighth week postpartum there were 7 with 1 plus laceration, 9 with 2 plus and one with 3 plus laceration of the perineum in cases on which I had done episiotomies.

The next figures are interesting. At the eighth week of gestation I

found perineal relaxation in cases not lacerated at the time of birth, no visible laceration, 21 of them. I found 19 with 1 plus laceration, 9 with 2 plus, and 3 with 3 plus, though they were not torn at labor.

In the next subject here, "Old perineal lacerations repaired," we did not put on the chart what I meant, that is, an old laceration repaired at a recent delivery.

It is interesting to note that all of these repairs held very well except two. There were two cases that had 2 plus lacerations at the eighth week postpartum.

We removed hemorrhoids in two cases. There were two cases of fractured coccyx or dislocation of coccyx at labor, one which I broke before delivering a head, feeling that it couldn't get by. These cases had a long convalescence but had no coccygodinea or pain following it.

(4) Before the words, "The Elliott treatment, with its high, dry, temperature," on page 4: I didn't intend to get into acute infections but I wanted to mention this. I think it is unusually valuable in the subacute or chronic type of infections. The series of cases is too small to draw any conclusions from, but the treatment was reserved for very ill patients and I didn't care to take a chance on infecting the ovaries unless it was necessary. It was a very good percentage, to be studied further.

Dr. Wilson then concluded the reading of his prepared paper. (Applause.)

LATE COMPLICATIONS OF THE PUERPERIUM

Lester A. Wilson, M.D., Charleston, S. C.

During the last few years there has been a great deal of emphasis placed on the question of prenatal care, and most of us agree that medical attention during pregnancy is a necessary part of sound obstetric practice. While it is true that most of the early symptoms of dangerous complications may be first noted during pregnancy, the fact remains that practically all mortality and morbidity actually occur either during labor or the Puerperium.

Wanting to know just what price women in the middle strata of society pay for reproduction, among those who are well cared for, having the proper food and vitamins and good medical care, I have made a study of 1,000 cases taken from my private practice. This report does not include cases seen in emergency, nor consultations, but were patients who came to me early in pregnancy and carried out my advice. All of them were not normal patients, for many had had complications in previous pregnancies. However, they were patients for whose outcome I assumed entire responsibility.

The following charts will show the result of this study.

In 1,000 deliveries, there were:

	No.		No.
Multipara	642	Version	20
Primipara	358	Breech	34
Male	519	Cesarean	21
Female	481	Toxemia, Labor Induced	62
Twins (sets)	8	Gross Maternal Mortality	1
Forceps	103	Gross Infant Mortality (including 6 deformed)	26

There were in 1,000 cases:	No.
Placenta previa	4
Premature separation placenta	1
	No.
Adherent placenta	5
Prolapse umbilical cord	5
Post partum hemorrhage	15

Eighth week postpartum:	No.
Cervix, lacerated	57
Cervicitis	103
Sub-involution	82
Mal-position of Uterus	102
Congestion or slight infection of Uterus and Adnexa	112
Phlegmasia alba dolens	0
Phlebitis of the pelvic veins—total number not known	....
One case developed embolism and pulmonary thrombosis—died	1
Endocarditis, acute	2

As describing perineal lacerations first, second, and third degree did not satisfactorily explain the extent of the laceration, especially in the second degree type, I have used (entirely for my own purpose, and without any desire to change the nomenclature), the term, "Plus" from one to four by dividing the perineum by imaginary lines into four equal parts. One plus would be a very slight laceration and on through until a four plus would indicate a complete tear into the rectum. The next two slides explain this diagramatically.

The cause of all maternal mortality (one death) in my series of 1,000 cases (Chart No. 3) was Phlebitis of the pelvic veins. This condition was not suspected and the patient was allowed to get up, breaking off a clot which lodged in a pulmonary vessel. She died four days later from infarction.

	At Time of Delivery				8th Week Post Partum			
	x	xx	xxx	xxxx	x	xx	xxx	xxxx
Perineal laceration (292)	110	146	35	1	56	40	12	0
Episiotomies (67)	0	0	0	0	7	9	1	0
Perineal relaxation in cases not lacerated (21)	0	0	0	0	19	9	3	0
Old perineal lacerations (21) repaired at delivery	0	0	0	0	0	2	0	0
Hemorrhoids removed at time of delivery (21)	0	0	0	0	0	0	0	0
Fracture of Coccyx (2)	0	0	0	0	0	0	0	0

Before considering treatment it might be well for us to refresh our memory as to the condition of the uterus after labor.

When the placenta and membranes separate during the third stage of labor, the Uterine cavity is almost, if not totally, devoid of endometrium or decudia, with the exception of cells situated in the base of the glands.

The Cervix, which dilates, from the small cervical canal of the non-pregnant state to about 12 centimeters in diameter, certainly must also be denuded. To prevent infection of these structures and see that they return to normal, should be our duty.

The prevention of Puerperal infection should not end by the use of an aseptic technique for delivery and the early Puerperium. We should advise our patients about when tub bathing, sexual intercourse, etc., may be resumed. I feel that while the Endometrium is not entirly repaired at the end of the third week, repair has progressed far enough to make it safe to begin these practices by this time, provided there are no complications.

It is not sufficient to treat puerperal infection only until fever, leukocytosis and localized evidence of the acute disease have disappeared for frequently chronic pelvic and distant lesions are left which are dangerous to life and health. The acute infection, by extension into the immediate neighborhood of the uterus, frequently leaves chronic consequences from pelvic cellulitis, metritis, salpingitis or peritonitis, and the blood-borne germs may attack distant organs, resulting in chronic arthritis, grave cardiac lesions or chronic Nephritis.

In ten cases of acute puerperal infection treated in the Roper clinic with deep X-ray therapy, there was one death. This case was moribund with general septicemia. It was our impression that the mortality and complications was reduced by this treatment.

Our technique was as follows: with the ovaries screened we gave 200,000 volts (deep) X-ray therapy with one half mm. copper filtration in all cases. A 15 by 15 cm. anterior pelvic field was used throughout and from 150 to 200 roentgens was the individual dose. From 2 to 10 treatments were given, at two- or three-day intervals, depending on the progress of each individual case.

The Elliott treatment, with its high, dry, temperature 125 to 130 degrees, has been of help in selected cases. The Hemoglobin should be watched and if the patient is anemic, blood transfusions are of much value. In fact, frequent blood transfusions is the most valuable treatment we have in acute or chronic types of infection.

In most cases of sub-acute pelvic infection conservative non-operative treatment will suffice, so that an operation will not be necessary. This requires coöperation by the patient over a long period of time.

In cases of chronic infection, when an operation must be performed, most patients will obtain the greatest amount of relief by some radical operation.

Chronic Cervicitis:

Of the local pelvic lesions, the most common and persistent is cervicitis (10.3 in this series), which, with its annoying leukorrhea follows nearly every case of childbed fever and occurs also in an inordinate number in which there has been no sepsis. Cervicitis is not a trivial lesion, but is a focal infection with far-reaching possibilities. Furthermore, chronic inflammation of the cervix is a dangerous disease, for, by its long continued irritation, it is potentially a precancerous condition. Therefore, every child-bearing woman should be treated until all evidence of cervicitis has entirely disappeared, because (1) an infected cervix is, with its attendant leukorrhea an annoying disease; (2) it is dangerous focus of infection the same as infected teeth or tonsils, and (3) it is potentially a cancerous condition, for chronic irritation is the one etiologic factor about which there is general agreement.

The treatment of cervicitis should be antiseptic douches and applications, iodine, mercurochrome, followed by the weaker astringent douches which may be started at the third week. When these have failed, the electric cautery when properly used will cure nearly all erosions and nabothian cysts. If the cautery is carried out with too large a tip, or if the cauterization area is too deep, or extends too near the internal Os, there is great danger of stenosis of part or all of the cervical canal.

Electro surgery, or coagulation, coning out the cervix may be used, but it too may cause stenosis. Extensive laceration should be repaired. For this purpose, many Gynecologists prefer the Stermdorff operation.

Malposition:

In spite of the fact that some women with retroversions of the uterus have no untoward symptoms, they are sources of invalidism in others. Various authorities place the incidence of retroversion after delivery at from 20 to 40 per cent. In my cases, the frequency was 10.2 per cent. Perhaps this low percentage is due to poor diagnosis.

This condition may be relieved by simply replacing the Uterus at the end of the lying-in period, at which time, whether there has been a displacement or not, the patient should be instructed to take moderate physical exercise, to do the kangaroo walk, and how to assume correctly the knee chest posture. These, particularly the kangaroo walk, help to maintain the normal position of the uterus, and not infrequently cause the retroverted puerperal uterus to return to the normal position. Beck, when he introduced the "Kangaroo walk" proved, by a large series of cases each alternate one being a control, that those using this exercise had fewer retroversions. Should the retroversion persist in spite of its primary replacement, and the physical exercises, the uterus may then be replaced at the fourth to sixth week and a carefully fitted pessary adjusted.

Sub-involution may be prevented by small doses of fluid extract of Ergot, four times daily, for two successive days, by the application of

an ice cap over the abdomen and elevation of the head of the bed, all of which favors drainage. In my series of cases there were none which required operative interference.

It is interesting to note that there were nineteen patients in this report who had relaxation of the perineum at the final examination among those who were not visibly lacerated at the time of delivery. This was evidently caused by a rupture of muscle without lacerating through the mucus membrane or skin.

Perineal lacerations or episiotomies occurred in 36 per cent of these patients, rather frequent when one considers that 65 per cent of them were multipara. However, it is my impression that a multipara with a good perineum is just as likely to tear as a primipara is.

The best prevention of perineal lacerations is a relaxing anesthetic, slow delivery of the head and shoulders, and ironing out the perineum. There are many who prefer an episiotomy in every case and there is certainly much to be said in favor of it, both for the mother and certainly for the baby.

In repairing a laceration or episiotomy, it is important for the obstetrician to change his gloves, re-drape the patient and use an antiseptic solution (I prefer Iodine in alcohol) to cleanse the wound before suturing, strict aseptic care during the Puerperium and two weeks rest in bed before sitting up. When the primary repair does not satisfactorily unite, a secondary repair is advisable. I have found the perineum to regain its tone as late as six months Postpartum and usually wait until that time before advising operation, unless the laceration is very extensive.

Mental:

One of the most important points to be considered during the Puerperium, is the mental condition of the patient. While in this series there were no cases that actually went insane, I must admit there were many, like lots of us, who needed rest in a sanatorium. The psychiatrists tell us there is no insanity of pregnancy, but it is claimed that one woman develops a psychosis for every 1,000 deliveries.

Zilboorg reports that 8 per cent of their admissions belonged to the pregnancy group and were most frequently seen in cases with infection or toxemia.

I believe that all obstetrical patients have some mental disturbance probably caused by the vast change which is taking place as a result of involution, lactation, etc., and have found it beneficial to explain to the family, the patient's need of rest and protection from worry and annoyance.

Contraceptives:

I believe in child-spacing and feel that two years should elapse between pregnancies, and that it is our duty to advise not only the

patient, but her husband, the plan of birth control which seems best for that particular patient not leaving the question of selecting a method to their own judgment which we so often do.

In closing, I should like to emphasize that just as prenatal care saves the lives of thousands of women and babies each year, so will Postpartum care, if conscientiously carried out, result in the cure of many abnormal conditions and in the prevention of others. Most of our gynecological patients come to us with ailments which are directly attributable to childbirth, a large proportion of these women would have been spared their annoying illnesses, had they received proper postnatal attention. Let us give women as much attention after their babies are born as before, and we shall avoid untold misery.

Chairman Carter: I am going to ask Dr. Oren Moore of Charlotte to express our appreciation of Dr. Lester Wilson's talk.

Dr. Oren Moore (Charlotte): Mr. President, Ladies and Gentlemen: I am honored to be asked to express the Society's appreciation of Dr. Wilson's paper, and of Dr. Wilson's presence. It gives me an enormous amount of personal pleasure to renew an old acquaintance in these surroundings. I have frequently been a guest in his state, and am very happy that it is possible to be a partial host to him in this state.

There is, of course, no discussion permitted, and none will be attempted. I just want to say we are awfully glad you are here, Doctor.

Dr. Wilson: Mr. Chairman, I have no objection to any discussion of the paper, if you wish it.

Chairman Carter: All right. There will be five minutes for general discussion of this paper if anyone wishes to discuss it.

Dr. Ross?

Dr. Brewer?

I am afraid they are a little shy, Dr. Wilson.

We will go on with the next paper by Dr. John C. Burwell of Greensboro, "Vaginal Hysterectomy."

Dr. Burwell then presented his prepared paper. (Applause.)

VAGINAL HYSTERECTOMY

J. C. Burwell, Jr., M.D., Greensboro, N. C.

The idea of the removal of the uterus through the vaginal canal seems to have occurred to the profession rather early in medical history. The writings of the Greek physicians, Soranus, and Aetius, around 500 A.D. allude to extirpation of the uterus. But the first case we find on record is that of Berengarius of Bologna, who in 1507 is reported to have made a partial vaginal hysterectomy. Credit for the first real total extirpation of the uterus goes to Andreas A. Cruce of Granada, Spain, who in 1560 did a vaginal hysterectomy for uterine carcinoma. Joannes

Schenk of Granbaberg, in 1600 collected and reported 26 cases, but the majority of these reports showed only partial removals.

Baudelocque, working in France, gave credit for the first operation of this kind to Lauvariol. Later he, himself, taught the procedure and from 1801-1816 performed 23 partial or total hysterectomies. Many workers reported success with this procedure in the following few years, but it remained for Langenbeck of Gottingen in 1813 to perform the first deliberately planned vaginal hysterectomy in accordance with modern scientific methods. He removed in its entirety a carcinomatous, prolapsed uterus by a process of enucleation and tied all the vessels with ligatures; the patient recovering and living for thirty years after the operation.

The publication by Rokitansky in 1878 of the results of Freund's abdominal operation showed the rather alarming statistics of 65 deaths in a series of 95 patients. This did much to discredit the abdominal operation and served to popularize vaginal hysterectomy. The technic had been constantly improved upon since the innovations of Langenbeck and by 1882 most of the great Germans were using it as the method of choice. From there it spread in favor throughout the surgical world, and though up to this time it had been used chiefly in cases of uterine carcinoma, its indications now became more widespread.

The history of vaginal hysterectomy in the United States seems to have begun with Dr. J. Warren, professor of anatomy and surgery of Harvard University, who, on May 1, 1829, performed the first operation of this kind of which we have any record in this country. The old story of "the operation being a success, but the patient died" seems to have been true in this case, as the unfortunate woman survived only until the fourth day post operative. The first successful vaginal hysterectomy was performed in 1832 by Herman and Werneberg of Pittsburg, Pa., who removed nearly the whole of a cancerous uterus with good results.

The modern operation, however, was not fully introduced to the American medical public until 1881, when the classic article of Christian Fenger was read before the Chicago Medical Society. He described his first case in detail, laying stress upon the fact that the vaginal vault was entirely closed after each broad ligament had been ligated from below upward. Dating from this report, the operation seems to have increased in popularity among the American surgeons. The chief indications were carcinoma, inversion, and procidentia. At the present time the two chief exponents of the operation are, Dr. J. W. Kennedy, of Philadelphia, Pa., and Dr. N. Sproat Heaney of Chicago, Illinois.

Dr. Kennedy champions the so-called clamp method of vaginal hysterectomy, while Dr. Heaney favors the suture method. The careful investigation and valuable case reports of both of these men necessitates some enumeration of the important features in the technic of each. Dr. Kennedy's article in the September 1936 issue of the *American Journal of*

Surgery, describes clearly and concisely the method he employs in the clamp type of operation.

I had the pleasure of working for some time with Dr. E. W. Holladay in Bellevue Hospital, who employs this technic exclusively, and I can say from personal observation that the results obtained have been uniformly very good. As a matter of fact, Dr. Kennedy claims that vaginal hysterectomy by the clamp method has the lowest mortality of any major operation in surgery. In the hands of a skilled operator it is certainly a beautiful procedure to watch, being done with very little loss of blood and with a rapidity which astonishes the unitiated observer.

The first and one of the most important steps in the operation by Kennedy is the cleansing of the vaginal canal. This is, of course, preceded by the regular preparation which is given for any vaginal operation. Cleansing is accomplished by means of a handled scrubbing brush used with green soap and a stream of sterile water played on the parts through a nozzle. A positive water pressure is obtained by hanging the container on a support at least five feet above the floor. The scrubbing is carried on for at least five or ten minutes, no antiseptic solution being used in the canal. The vaginal mucosa frequently bleeds freely from this rather severe toilet.

After preparation of the field, the cervix is pulled down by means of a single teneculum and the anterior and posterior lips grasped firmly by a strong vulsella clamp. Exposure of the operative field is effected by traction on a Sims speculum in exactly the opposite direction to the pull on the vulsella. An incision is begun on the left side, well up, carried in a semilunar circle around the cervix posteriorly, and continued until the two extremities of the cut are joined. If this incision is made well up, it will be found that the line of cleavage is much more easily established and it will be possible to push the vaginal fornix forward to expose the bladder, and in the same way the entry into the cul-de-sac, posteriorly, will be less difficult. The vaginal tissue is separated from the cervical neck by means of blunt dissection, usually a piece of gauze over the index finger being entirely adequate for the procedure. To enter the pelvic cavity posteriorly, the peritoneum is picked up with forceps and cut with scissors. In making the anterior reflection, care should be used in pushing the vaginal fornix back from the cervix, as the bladder and ureters are usually pushed up and out of the way at this time. The posterior opening is next stretched to its full extent bilaterally until the operator is able to see the attachments of the broad ligaments to the uterus. The fundus is then delivered posteriorly by any means which the operator finds most feasible. Dr. Kennedy has recommended the progressive engagement by means of prostatic retractors until the delivery is complete.

The fingers of the left hand are next passed through the posterior opening into the pelvic cavity and pulled forward in the vesico-uterine

space. By this procedure the lower limits of the bladder margin are clearly defined and the peritoneum may be severed without danger of entering the bladder. The opening into the vesico-uterine space is now stretched with the fingers until it is possible to grasp the right broad ligament with its contents between the index and middle fingers. With these fingers as a guide, the contained structures, consisting of tube, round ligament, broad ligament, uterine vessels, and branches of the ovarian vessels, are clamped from above downward, since the delivery of the uterus has left them inverted as related to their normal position. The broad ligament is now cut between the clamp and the body of the uterus and the procedure repeated on the left side. At the conclusion of this step the uterus has been freed of all its attachments and falls into the operator's hand. The clamp handles are now brought forward and downward and the severed ends of the broad ligament are pushed inward and upward together with the vaginal fornix. Gauze drains are inserted to act as a plug or pack and prevent any prolapse of the abdominal viscera. They extend up into the abdominal cavity to the same height as the ends of the clamps which are grasping the extremities of the incised broad ligaments. In this work Dr. Kennedy uses clamps which have detachable handles. They are surrounded with gauze and left in position for 48 hours, after which time the gauze packing is removed and the clamps taken off. It is a good rule to loosen the clamps one notch and allow them to remain for one hour longer in place before their final removal, as this precaution will show up any bleeding from the stumps of the broad ligaments.

The technic employed by Dr. Heaney differs from that of Dr. Kennedy first in the fact that the peritoneal cavity is entered through the anterior cul-de-sac. Another peritoneal invasion is made through the posterior cul-de-sac and the intra-peritoneal work is done with the uterus in situ. The sacro-uterine ligaments are identified, clamped and cut and the clamp immediately replaced by a fixation suture. Where necessary the bladder and urethra are supported by approximating the lateral fascial walls and even in some cases by stitching the severed ends of the round ligaments beneath the internal urinary meatus. The broad ligaments with their contained structures are clamped and severed and then sutured with No. 2 ten-day chromic catgut. The sacro-uterine ligaments are sutured together and the broad ligaments are sutured both to the vaginal fornix and to each other, effectively closing and raising the vaginal fornix. If desirable, both anterior and posterior colporrhaphy may be done at the time of operation; a procedure which is impossible under the technic of Dr. Kennedy.

It is exceedingly interesting to note that Dr. Heaney reports a total of 627 cases with a mortality of 3 or 0.47 per cent. He comments, to quote: "There has never been reported a series of hysterectomies by the

abdominal route with so low a mortality rate." Certainly the number of days of hospitalization are lowered.

Personally, I prefer to use a modification of the two operations outlined. In this modification, the peritoneum is entered through the posterior cul-de-sac, but the broad ligaments are tied with suture ligatures to each other and to the vaginal fornix. This method allows either anterior or posterior colporrhaphy, or both where these procedures are necessary.

The indications for vaginal hysterectomy vary with the eccentricities of the surgeon. They have been done and are being done for most of the conditions which call for abdominal hysterectomy. The types of pathology in the main, however, are: prolapse, fibromyomata, carcinoma, uncontrollable menorrhagia, adenomata, persistent leucorrhea (uterine origin), retroversion, ovarian cyst, endometriosis, cervical carcinoma, stricture of cervix. Some men would include other indications in the list but most Gynecologists would eliminate the majority of these from consideration.

The post operative complications are those which may follow any surgical procedure and in the main are: wound infection, pyelitis, peritonitis, recto-vaginal fistula, post operative hemorrhage, pelvic abscess, vesico-vaginal fistula, phlebitis, and pulmonary embolism. Most of these need no discussion. It might be well to say that in cases where the bladder is punctured—closure with a simple purse string suture and the insertion of a retention catheter gives most excellent results.

Probably the most fair minded approach to this whole subject has been made by H. G. Cogswell, of Tyler, Texas. He has compared a series of 179 consecutive vaginal hysterectomies with 200 consecutive abdominal hysterectomies done by eleven different surgeons. Over the entire age group ranging from 20-70 years, the average morbidity for vaginal hysterectomy was 4.7 per cent as compared to 2.9 per cent for abdominal hysterectomy. However, in the higher age group of patients, ranging from 50-70 years, the morbidity for vaginal hysterectomy was lower. He attributed this to the fact that in the higher age group most of the vaginal hysterectomies were done for procidentia, while other indications were responsible for most of those in the lower age group. This finding grows in importance when we note that the series was done by surgeons of varying skill and experience and was not limited to one or two men skilled in the vaginal route. From this we might rightly conclude that vaginal hysterectomy in the hands of the unskilled surgeon is of value chiefly in prolapse.

Ulrich points out that post operative dangers of embolism following the operation are markedly decreased from other types. He attributes this to the lack of operative shock. Shock not infrequently follows abdominal operations, and is due to a number of causes, among them, long duration of the operation, long inhalation anæsthesia, and extensive and

often brutal manipulations in the abdominal cavity. On the other hand, vaginal operations may be performed quickly without a general anæsthesia and with a minimum of manipulation. Furthermore, there is far less risk of infection when an operation is performed through the vagina than through the abdomen.

Conclusions:

1. Vaginal hysterectomy in the hands of a skilled operator offers a shorter, less traumatizing, and less dangerous method of removing the uterus for many forms of pelvic pathology.

2. In the hands of the relatively unskilled, it is the method of choice in cases of procidentia.

3. In either case the morbidity and mortality is low.

4. In most types of vaginal hysterectomy, colporrhaphy may be done along with the hysterectomy.

References:

Bellevue Hospital, New York City.
Piedmont Memorial Hospital, Greensboro, N. C.
Holladay, E. W., New York City.
Year Book, 1936, pp. 417; 419-422.
Duke Hospital Library.
Cogswell, H. D. Indications for vaginal hysterectomy. Surgery, Gynecology, and Obstetrics 65: 837, 1937.
Heaney, N. S. A report of 565 vaginal hysterectomies performed for benign pelvic diseases. American Journal of Obstetrics and Gynecology 28: 751, 1934.
Idem. A series of 627 vaginal hysterectomies performed for benign diseases with 3 deaths. American Journal of Obstetrics and Gynecology 30: 269, 1935.
Idem. Vaginal hysterectomy in the cure of prolapse uteri. American Journal of Surgery 33: 471, 1936.
Idem. Personal communication.
Kennedy, J. W. Vaginal hysterectomy, clamp method for uterine prolapse. American Journal of Surgery 33: 428, 1936.
Idem. Personal communication.

Chairman Carter: The discussion on Dr. Burwell's paper will be opened by Dr. L. C. Ogburn of Winston-Salem.

Dr. L. C. Ogburn (Winston-Salem): I think this Section should duly appreciate Dr. Burwell's bringing to us a paper obviously so scholarly in its preparation and so clear and practical in its presentation.

There are a few points in it which I should like to emphasize and a thought or two of my own which I believe would be in order here.

To take these up in the reverse of chronological order: The post-operative course of this procedure is remarkably smooth. It must be, to give a mortality rate of approximately one-half of one per cent from a major operation which is most often performed on patients of advanced age. On the other hand, there are usually no intra-abdominal complications preoperatively, and we all know that it is these difficulties which eventually lead to post-operative trouble. So perhaps the advantage is a bit more apparent than real when we recall that extensive intra-abdominal complications rule out vaginal hysterectomy.

As to the methods: Since vaginal hysterectomy should not be done without a certain amount of outlet relaxation and prolapse, and since the clamp method does not permit anterior and posterior colporrhaphy, it seems that this method should be reserved for those cases in which it is necessary to remove a diseased uterus from a poor operative risk with the least difficulty.

In preoperative preparation, Campbell of Montreal found that thirty per cent of a large series of patients admitted for vaginal hysterectomy showed definite disturbance of carbohydrate metabolism, so that it behooves all of us to look carefully into that phase before operation.

Another condition often present in a patient for vaginal hysterectomy is senile vaginitis. Of course, this should be corrected by douches and possibly estrin therapy for two or three weeks before admission to the hospital.

Dr. Burwell said that the indications for this operation vary with the eccentricities of the surgeon. I believe that this is true in practice, but do not think it should be. Certain very definite conditions should prevail before a vaginal hysterectomy is undertaken. Most important is that if the patient is under forty-five years of age there should be present in the uterus itself pathology which carries the indication for hysterectomy. Prolapse per se is not an indication; neither is a diseased cervix, nor functional uterine bleeding, nor the existence of a sufficient number of offspring.

There are better ways than hysterectomy or castration by irradiation to deal with these conditions in a patient before the menopause. The sooner all of us who are doing gynecology and the radiologists realize that fact, the fewer miserable women there will be to harass the family doctor and the psychiatrist.

Chairman Carter: The paper is open for general discussion.

Dr. G. E. Bradford (Winston-Salem): Mr. Chairman, I think vaginal hysterectomy is certainly rapidly becoming accepted as an operation that we should use more frequently, that many of us particularly in this part of the country are not familiar with, and therefore are not using as much as we should. Undoubtedly very definite indications should be seen before vaginal hysterectomy is attempted.

One of the most important indications probably is that of more or less certainty of diagnosis. Vaginal hysterectomy is not a conservative procedure. It is a radical procedure from the standpoint of there being any uncertainty of diagnosis. Frequently hysterectomy or some pelvic operation is thought to be necessary without knowing exactly where we stand ahead of time. Frequently in a woman who is not past the childbearing age vaginal hysterectomy of course results in a cessation of the possibility of childbearing, whereas laparotomy, or from above, would often result in myomectomy, or the removal of certain adnexal pathology, which in the end would be a great deal more conservative procedure.

My main comment about this interesting and well prepared paper would be that we should receive it as information, think about it more, study it more, and be more open-minded about using this procedure more frequently, when we can really conservatively justify its use. (Applause.)

Chairman Carter: Are there any other comments? The Chair would like to make a few remarks on vaginal hysterectomy.

I was the person who assigned this subject to Dr. Burwell. I think the big danger of vaginal hysterectomy is the ease of doing it. I think when it does become popularized it is going to be the test, really, not of operating ability, but of surgical judgment and gynecological judgment. Any fool can operate. I think the disadvantage of the operation, as I see it, is that when it does become popularized it will be used indiscriminately. I don't think leukorrhea from a uterus is by any means an indication for the removal of the uterus, nor do I believe that cervicitis in a young woman is an indication for removal, nor a marked laceration of the cervix in a woman of 35 who has had 15 children is any indication for removal of the uterus, because you have to consider the age factor.

We do know, however, that this operation is being done more and more. Our feeling is this: That this operation should be reserved in most instances to those patients who are quite old with a prolapsis which has given them a great deal of difficulty, and especially if they are doubtful cases, in patients who have had at least a trial at pessory support, the type that you hate to put down on the table for the long procedure of combining a pan-hysterectomy operation above and a proceeding below.

The danger of the whole subject and the reason we wanted it brought up before the group is simply this: That it is going to be more and more simple. We have improved anesthesias that we are obtaining. The thing that we ought to be thinking about as people interested in obstetrics and gynecology is not to see this operation abused as we have abused this operation for suspension of these harmless uteri, the retroversion being explained as the basis of all the trouble.

I don't think prolapsis in most cases gives much trouble. I think you can carry the woman of childbearing age through many years of comfort, but when you do have a definite case as the years go on, we will bring

this operative procedure down almost exclusively to a symptomatic prolapsis in elderly people.

Is there any other discussion? If there is no other discussion, we will proceed with the program.

The next paper is by Dr. Walter L. Thomas of Durham on "Lymphogranulomatosis Venerum."

Dr. Thomas. (Applause.)

Dr. Thomas then presented his prepared paper, illustrating with slides, during the course of which the following comments were made:

Dr. Thomas: (Slide.) The first slide—I am sorry it is not showing very well—is what we consider a positive Frei test. If you will notice, there is a little pink papule, or, rather, red papule, with a surrounding pink halo. In my opinion that red papule should be at least six-tenths of a centimeter in diameter to be called a positive test. Usually we will put three antigens for a Frei test on our arm, and we will put a Ducrey vaccine test and a normal saline solution on the arm for control.

(Slide): This is a little better. This is what we call a plus-4 test, where you get necrosis in the center of the papule. I might say that this test is positive for life. Years after the patient has had healing of the lymphogranulomatosis she will have a positive test, so if we go back and do this test on those benign strictures that we treated years ago, calling them syphilitic strictures of the rectum, we will get a positive Frei test perhaps. Hence benign strictures of the rectum in the female are very seriously to be considered as due to lymphogranuloma inguinale.

(Slide): These are some darkfield examinations of spirochetes. It is interesting to see that every one of these spirochetes is a treponema, but none of them are treponema pallidum. This Number 1 is very much like treponema pallidum and is very often confused with it.

Number 2 is the ordinary spirochete found in the mouth and Number 3 is the fusis spirochete, so called because it has a fusiform bacillus associated, found in the vagina very frequently.

(Slide): Here is what I think will be a great help to the doctors throughout the country. We have a necrosin stain here that we are using, whereby the background is stained darkly, the treponema pallidum fails to take the stain, remains refracted. This would be very useful in those places where you don't have a darkfield microscope. You can use this necrosin stain, and it will give you almost the same picture as a darkfield examination for syphilitic lesion.

(Slide): Here is a very interesting thing, a positive diagnosis of chancroid. When you get these streptobacilli, so-called Ducrey bacilli, in parallel chains you can almost make a positive diagnosis of chancroid, Ducrey bacilli.

(Slide): Here we have a beautiful slide of Donovan bodies. You see this big monocyte with the large nucleus. Under a microscope stained

with the right stain they will be pink with a little pinkish halo surrounding them.

(Slide): Here is a gonococcus in a leucocyte with which you are all familiar.

(Slide): Here are some treponema pallida taken from an ordinary darkfield.

(Slide): Here is a syphilitic lesion, and that is the reason I want to emphasize to you that all these ulcerative lesions on the vulva look alike. They may be syphilis, they may be lyphogranuloma inguinale, they may be chancroid, they may be simple ulcer or carcinoma. So we believe in doing at least the tests that I have mentioned.

(Slide): This is a chancroid, an early chancroid, due to Ducrey bacilli.

(Slide): Here is a granuloma inguinale. We have some lyphogranuloma inguinale that look exactly like that. See the elephantiasis, and so forth.

(Slide): Here is a lymphogranuloma surrounding the rectum. A lot of people would think that was just simply venereal warts.

(Slide): Here is a lymphogranuloma with the buboes in the inguinal region and the fistula forming.

(Slide): Here is a beautiful case, but the slide is poor, of the far advanced esthionmene in fistula formation in the vulva. It shows some extremes that this lymphogranulomatosis can go to.

(Slide): Here is the extensive fistula esthiomene with positive Frei test.

(Slide): Here is another picture of the extensive esthiomene with the perirectal formation.

(Slide): Here is a far advanced rectal involvement surrounding. This one, by the way, had a stricture of the rectum. (Applause.)

LYMPHOPATHIA VENEREUM: EARLY DIAGNOSIS AND TREATMENT

Walter L. Thomas, M.D., Durham, N. C.

The medical profession is aware that Lymphopathia Venereum or Lymphogranuloma Inguinale is no longer a rare venereal infection confined to the tropical sea-coast towns. There have been many contributions during the past ten years which clearly show that this disease can be found in any locality where one looks for it.

Lymphopathia Venereum is a definite virus infection occurring among both white and colored races. The colored race has a larger incidence in the South. Males are affected more often than females in both races. Esthiomene, chronic hypertrophic vulvitis, chronic elephantiasis, tropical or climatic bubo, inflammatory strictures of the rectum are recognized as various clinical forms of the one disease.

Time will not permit me to review more than briefly the etiology, clinical course and pathology of the disease, as we are especially concerned with the diagnosis and the present accepted line of therapy. It is generally agreed that the causative agent is an ultra-microscopic virus which in nearly every patient is transmitted during sexual contact. The primary lesion usually takes the form of a small herpetiform vesicle or ulcer which is often circular in outline. The lesion is usually painless, involving the coronal sulcus, glans penis or prepuce in the male, and the fourchette, posterior vaginal mucosa, clitoris and posterior lip of the cervix in the female. This initial lesion is usually transitory and heals spontaneously. More often, the patient's first knowledge of the disease occurs at the time a bubo, esthiomene, or rectal stricture makes its appearance. The incubation period from time of exposure to the appearance of the primary lesion is possibly a few days to one week. After ten days to three weeks and rarely six weeks following the coitus, the male notes swelling of the inguinal glands. This swelling may be unilateral or bilateral. The adenitis at its first stage presents a fairly uniform, indurated and tender mass. As the bubo increases in size, it becomes adherent to the skin, which, in turn, becomes shiny and takes on a purplish color. The glands progress to suppuration and fistula formation, and drain a thin sero-purulent pus for weeks or months. The disease usually runs a chronic course, with the formation of a heavy scar tissue.

In the male the lymph drainage of the genitalia is primarily to the inguinal lymph nodes; whereas, in the female, only the lymph from the clitoris, urethra and external vulva drains to the inguinal nodes. The supply from the posterior vaginal wall and fourchette drains into the lymph plexuses about the rectum. This accounts for perirectal involvement and stricture being more common in the female. Small, flat, and indurated lesions appear about the posterior fourchette or rectum, and resemble condylomata lata. As these become conglomerate, multiple fistulæ may occur, and as the lymphatic drainage is blocked and scar tissue forms, elephantiasis of the tissue, and large rubber-like polypoid growths about the genitalia, develop. There is usually a superimposed secondary infection. The infection progresses in instances and spreads about the rectum with production of induration and dense rectal strictures. The involvement of the rectal and pelvic lymphatics may produce distressing rectal and genital symptoms. Low grade pelvic pain, bloody mucous discharge from the rectum, tenesmus, sacral backache, dyspareunia and pruritus occur frequently.

During the stage of invasion of the lymphatic glands, constitutional symptoms such as fever, chills, sweats, anorexia, nausea and vomiting, lassitude and prostration may occur. Splenomegaly and joint manifestations have been noted.

Diagnosis: Lymphopathia Venereum, as with other venereal infections,

is often *misdiagnosed.* One *must think of it as a possibility if* one is to make a correct diagnosis.

Naturally every venerealogical case should be subjected to as many tests and laboratory examinations as possible. At the Duke Clinic, we feel that the following procedures should be the minimal routine carried out on every patient with genital ulcer and bubo:

1. Darkfield examination for treponema pallidum.
2. Smears for gonococci, Ducrey bacilli, Donovan bodies, and fuso-spirochetes.
3. Frei test.
4. Ducrey bacillus vaccine test.
5. Wassermann or some similar serological test.
6. Biopsy of the ulcer.

It is not entirely unlikely that we may have two or more associated venereal infections in the same individual. Also the patient may have had lymphopathic venereum many years before, which has long ago healed and the present ulcerative lesion may be an early carcinoma. We have recently had a patient who had an ulcer on the left labium minus and a large suppurating bubo in the left inguinal region. The Ducrey vaccine test was positive. The pus from the bubo gave a pure culture of Donovan bodies. If we had depended entirely upon the vaccination, our diagnosis would have been chancroid when in reality the patient had granuloma inguinale.

Greenblatt and Sanderson (10) have shown that the Ducrey vaccine made from the *cultured bacilli* is far more effective as a diagnostic test for chancroid than the *pus* vaccine. The culture vaccine of Ducrey bacilli has also been used therapeutically to a very large extent with favorable results. The specificity of this therapy is demonstrated in those cases of mixed buboes consisting of chancroid and lymphopathia venereum; under treatment only the chancroid disappears and lymphopathia venereum remains.

Lymphopathia Venereum should be treated in the early stage if a favorable result is expected. Therefore it is prudent that we make an early diagnosis. We have a simple, harmless and accurate diagnostic test at our disposal, namely the intracutaneous skin test of Frei. This test is of the inflammatory type. It indicates a hypersensitiveness of the infected body to the virus. It may occur as early as eight to ten days after the appearance of the primary lesion. The reactivity to the antigen remains for many years and perhaps for a life time, after the disease has healed.

The technique of the Frei test consists of the intradermal injection of 0.1 cc. of the antigen. An area of skin on the arm or thigh with relative freedom of hair should be selected. Two or more proved antigens, derived from different sources, injected simultaneously with a control of

normal saline, enhance the specificity of the test. Strauss and Howard have pointed out that the mouse-brain commercial antigens are very apt to give false positives and are not satisfactory. The best source of the antigen is from pus aspirated from an unopened bubo. This pus is diluted 1-6 or 1-7 in physiologic salt solution and inactivated by heat for three days. The reaction should be read only after forty-eight hours and also after the third and fourth days. A positive reaction is denoted by a definitely palpable red papule at least 0.6 cm. in diameter. A large erythematous halo about the papule is common. Care should be exercised not to measure the diameter of the zone of erythema in place of the papule.

Treatment. Many therapeutic methods have been used. The evaluation of effective therapeusis is handicapped by the fact that abortive forms occur with frequency. This has undoubtedly given rise to an amazing amount of literature claiming successful treatment of the disease by widely different methods. Such drugs as tartar emetic and fouadin have not given good results. We have not used the recent panacea, sulphanilamide, on Lymphopathia Venereum. Interestingly, our last two proven cases of chancroid have healed rapidly and completely within fourteen days on sulphanilamide therapy.

Anderson and Harmos (1), and Smith (9) have recently reported most encouraging results with the intravenous and intracutaneous injections of diluted sterile and potent Frei antigens. In my opinion this is the most rational line of therapy that has been employed in this disease, where heretofore the treatment in general has been so unsatisfactory and unreliable. It would seem the first step in the development of a specific therapy comparable to the tartar emetic for granuloma inguinale. The best results have been obtained where it has been used in the early bubonic stage. The Frei antigen is diluted 1-4. The diluted heat-treated pus in physiologic salt solution is administered intracutaneously at intervals of five to six days on the non-hairy surfaces of the thighs. The dosage has not been definitely established. Usually the initial dose is 0.05 cc., which is increased by 0.05 cc. up to a maximum dose of 1 cc. The administration of more than .3 cc. of the vaccine requires the making of several wheals. In general, the clinical response to the vaccine showed a gradual reduction in the enlargement of the glands and the prevention of the formation of new fistulas within ten to fifteen days. The treatment is continued until the adenopathy and sinuses heal. Anderson and Harmos have found that six to twelve doses of the pus vaccine are necessary.

The advanced esthiomene and rectal phases have not responded to this desensitization therapy. It is possible that if these phases are recognized early that this therapy will at least check the advancement of the disease to the destructive irreparable lesions seen in the last stage. We have just

prepared a vaccine made from three pooled antigens and it is very likely that this may be even more effective.

The early complete excision of the inguinal lymphatics and closure without drainage has given us the best results until now. I feel the combination of this with the vaccine therapy, until the wound is entirely healed, should insure even better results and perhaps prevent the elephantiasis and esthiomene which frequently develop in spite of the lymphadenectomy.

Radium and X-ray have in several instances given good responses in the bubonic and early ano-rectal stage.

It has been our experience that a vulvectomy is necessary in the handling of elephantiasis and esthiomene. The secondary infection should be cleared before this procedure. The vaccine therapy should be employed until the wound is healed.

The ano-rectal phase is the hopeless stage of the process. If the rectal involvement is diagnosed early before fibrosis, intensive desensitization with the virus over a long period is justified. Every effort should be made to prevent the superimposed secondary infection. In all patients, the rectum and skin about the anus should be kept as clean as possible. Constipation should be prevented. When peri-rectal abscesses form, they should be drained by wide incision and all fistulous tracts connecting with the lumen of the bowel should be excised in toto. Unnecessary surgical procedures and frequent dilatation of the rectum often lead to the opening of channels of secondary infection which otherwise might be prevented. In our opinion one is rarely justified in doing a colostomy. This does not cause a healing of the inflammatory process in the rectum, as do infections associated with carcinoma or injuries to the bowel. The radical removal of the rectum would not seem advisable. Most of the cases can best be handled by the vaccine therapy in an effort to prevent the spread of infiltration with the virus, and the use of sitz baths, enemas, and proper low-residue diet. The secondary infection can be controlled by intelligent surgical intervention.

Summary:

1. Early diagnosis of the disease is imperative.
2. The Frei intracutaneous test is specific.
3. The desensitization of the patient with diluted sterile and potent Frei antigen seems to be a most rational therapy. It is useful as an adjunct to surgical measures.
4. The esthiomene and elephantiasis of the vulva are best treated by vulvectomy after the superimposed secondary infection has been eradicated.
5. The rectal stricture phase is best handled conservatively with surgical intervention to control the secondary infection.

References

Anderson, O. L., and Harmon, Oscar: Lymphopathia Venereum: Treatment with Diluted Frei Antigen Intradermally and Observations on Diagnosis, Surgery, 3: 41, January 1938.

Mathewson, Carleton, Jr.: Inflammatory Stricture of the Rectum Associated with Venereal Lymphogranuloma, J.A.M.A. 110: 709, March 5, 1938.

Hamblen, E. C., and Derieux, G. H., Jr.: Lymphogranuloma Venereum, Va. *Medical Monthly*, February 1938.

Stannus, H. S.: The Sixth Venereal Disease, Bailliere, London, 1933, Tindall and Cox.

Cole, H. N.: Lymphogranuloma, The Fourth Venereal Disease and its Relation to Stricture of the Rectum, J.A.M.A. 101: 1069, 1933.

Strauss, Maurice J., and Howard, Marion, E. L.: The Frei Test for Lymphogranuloma Inguinale. Experiences with Antigens Made From Mouse Brains, J.A.M.A. 106: 517, 1936.

Howard, Marion E., and Strauss, Maurice J.: Lymphogranuloma Inguinale, Report of 16 Cases in and Around New Haven, New Eng. J. Med. 212: 323, 1935.

Gray, Laman A.: Lymphopathia Venereum. "Lymphogranuloma Inguinale" of the Female Urethra, Surg., Gynec. and Obst. 62: 745, 1936.

Smith, Leslie M.: Lymphopathia Venera. (Lymphogranuloma Inguinale) Southwest, Med. 19: 103, 1935.

Greenblatt, R. B., and Sanderson, E. S. Amer, J. Clin. Path. 7: 193, 1937. South. Med. Jour. 30: 147, 1937. Arch. Dermat. and Syph. 36: 486, 1937.

Chairman Carter: The discussion will be opened by Dr. Richard B. Dunn of Greensboro.

Dr. Dunn then presented his prepared discussion on Dr. Thomas' paper. (Applause.)

Dr. Richard B. Dunn (Greensboro): Although lymphogranuloma inguinale is seldom seen in the average patient in private practice, it is very important that we always consider it. In any venereal case it must be considered in the differential diagnosis. Dr. Thomas deserves to be complimented on his excellent paper and his timely presentation. In this era of syphilitic purging we can just as well strike at all the venereal diseases.

Perhaps one should not admit a weakness, but I must admit that I have always had difficulty distinguishing lymphogranulous inguinale and granuloma inguinale in the two separate and distinct clinical entities that they are. No doubt urologists dealing with these diseases in males have little difficulty in distinguishing them, but I do know that the vulvar picture is often very confusing.

It is my privilege to attend a gynecological clinic for Negroes and poor whites and these diseases are found at quite regular intervals. If we remember that granuloma inguinale is a disease of the skin and corium and is never attended with a fluctuant bubo and that lymphogranuloma inguinale is a disease primarily of lymph vessels and lymph glands, a big part of the differential diagnosis is settled. Granuloma spreads from a small macule in the genital area by continuity to the groin, thighs or abdomen and the granulations are raised above the level of the surrounding healthy skin and are pink and clear in appearance unless secondarily infected. Lymphogranuloma blocks the lymph channels and produces a hypertrophy of the affected area. This hypertrophy often ulcerates and is secondarily infected and it is then that the two diseases are very similar in gross appearance.

I have made these remarks because I want to emphasize the importance of having a routine to follow on every case as Dr. Thomas has outlined. It is not possible for all of us to have such a complete routine as at the Duke Clinic, but at least we can incorporate enough to allow us to make a differential diagnosis and then rule out certain factors and arrive at an accurate conclusion. There are now excellent laboratory facilities and we can apply the skin tests. Except in complicated or unusual cases the Wassermann, Kline or Kahn reaction, or the darkfield spells syphilis; the Donovan bodies spell granuloma inguinale; the Frei test spells lymphogranuloma inguinale; the Ducrey bacillis or the Ducrey vaccine test spells chancroid; and of course the gonococcus spells gonorrhea.

In the treatment of the venereal diseases and particularly the ulcer forms, it is interesting to note that Sitz baths accompanied by the strenuous application of soap suds is a powerful weapon. Granuloma inguinale responds to fouadin and tartar emetic. Unfortunately Frei antigens are expensive and unless a clinic has considerable financial support it is difficult to procure this medicine. However, Sulphanilamide is easily obtained and the newspapers caution us not to use the Elixir.

It has been a pleasure to hear Dr. Thomas' paper and a privilege to discuss it. Thank you.

Chairman Carter: The paper is now open for general discussion. We have made up our time now. It is five minutes to four. We have two more papers to be given. Some discussion will be welcome.

Dr. Lee, have you anything to say on this?

Dr. Leslie Lee (Kinston): I don't want to discuss it. I just want to ask Dr. Dunn if he meant sulfanilamide was good for lymphogranuloma, too.

Dr. Dunn: I shouldn't be talking, Dr. Thomas should be, but I read an article in the Yearbook that I believe was by the same authors that Dr. Thomas quoted, Dr. Greenblatt and somebody else down at the

University of Georgia, and they said that sulfanilamide was used with some favorable results. In Dr. Thomas' paper which I read he said that one case had cleared up under sulfanilamide treatment. I notice he didn't say anything about it today. (Laughter.)

I don't believe he knows the reason why it cleared up. (Laughter.)

Chairman Carter: We have a bacteriologist present.

Mr. Jones, can you give us a two-minute discussion?

Mr. C. B. Jones (Durham): I would like to say that if any of you would like to have Frei antigen I would be glad to send it to you as long as it lasts. It probably won't last very long if I get too many requests, but we will send you some.

Chairman Carter: What about the response to sulfanilamide? What is your opinion on that?

Mr. Jones: I don't know. I don't think we have had enough cases yet to tell. We have had a few.

Chairman Carter: Is there any other discussion?

Dr. Haywood, would you say something?

Dr. C. L. Haywood, Jr. (Elkin): My experience with these diseases has been limited to one patient. In this particular patient there was an ulcer on the vulva without any involvement of the glands in the groin, without any destruction except in the immediate vicinity of the ulcer, and no rectal symptoms. There was quite a question as to whether the patient had carcinoma, whether she had syphilis or some other type of venereal disease. We did the Frei test and it was positive and did a biopsy which was negative for malignancy.

I sent the patient down to Dr. Carter for his opinion as to treatment, and as was said earlier in the session, any fool can operate, but when to operate takes expert judgment. He advised a radical operation, which we did. There has been no recurrence. Thank you.

Chairman Carter: Is there any other discussion? Has anybody else seen any of this stuff?

If there is no other discussion, we will continue with the program.

The next paper is by Dr. Robert T. Ferguson of Charlotte on the "Ultimate Results in 218 Patients with Sterility."

Dr. Ferguson then presented his prepared paper. (Applause.)

ULTIMATE RESULTS IN 218 PATIENTS WITH STERILITY

Robert Thrift Ferguson, M.D.
Charlotte, N. C.

Having reported a large series of patients on whom I had performed the tubal patency test, both as a diagnostic procedure, and for sterility, using an apparatus designed by myself, I now desire to report a series of 218 patients who came to me purely on account of sterility.

One hundred and twenty of these were found to have non-patent

tubes, from one cause or another, leaving 98 whose tubes were patent. Out of these 98 patients 85.7 per cent conceived following insufflation of the tubes. This is to be considered a rather remarkable showing and this percentage might even be larger because a number of the patients have moved their residences and I have been unable to communicate with them.

It will be interesting to note some of the causes for this large number of obstructed tubes. The part played by the gonococcus is always in the majority, but since most people are reticent about displaying their illicit relations, or their family troubles, it is hard to determine definitely the actual number so caused; and since most of them are in the chronic state when I see them there is little chance of finding the gonococcus present. I have never been able to find this organism present as much as one year following the original infection, but all the patients have either the staphylococcus or streptococcus, or both, present as a result. All cases who have any colored vaginal discharge have cultures and smears taken and in those patients where the vaginal or cervical discharge is perfectly clear, and the symptoms or history point to an infection, are also cultured. I recall one patient who had no symptoms except an acutely inflamed wrist joint that was incapacitating, and whose vaginal and cervical secretions looked normal and clear like the raw white of an egg, who showed a pure growth of the gonococcus.

Only six patients out of this series admitted having had gonorrhea although I did not have an opportunity of seeing or questioning many of their husbands; still a large percentage of the patients with obstructed tubes gave a very definite history of having had a Neisserian infection. In only two of the patients with such a history was I able to open the tubes and one of these conceived following the test. The history of this condition and its consequences is quite significant.

Nine of this series had fibroid tumors in various stages of development and this is a frequent cause of sterility. One of this number who had multiple fibroids conceived following the test and carried through to term normally.

A number of these patients had had previous operations for various pelvic disorders and operations are always to be considered as a very definite detriment to future conception.

Five of these patients conceived following suspension of the uterus in whom no other cause was ascertainable except retroversion with the exception of one who also had a myomectomy. I have the histories of a large number of patients in whom I could find no other cause for sterility except that they had been previously operated upon.

Forty patients in this series were found to have retroversions and a third degree retroversion will nearly always show the tubes to be blocked, and this is quite natural since the turning of the uterus completely backward twists the tubes.

Anteflexion of the uterus accounted for ten of these cases of sterility, and I do not know of any condition that is more detrimental to conception than a well developed type of anteflexion, and I am sorry to say that there is very little we can offer in the way of relief or cure.

Ovarian cysts of large size were found in four cases of this series. A number had small cysts which were giving no symptoms and were of no particular consequence. Five patients had one ovary and a part of the other removed when they came to me and this is also rather destructive to conception.

One patient shed a complete cast of the uterus at each menstrual period and I do not know what effect this had on conception but she was sterile with no other demonstrable pathology.

Sixteen of these patients suffered from chronic salpingitis which very naturally accounted for their sterility. Six of this type had former plastic operations on the tubes and conception followed in one; in the other five the tubes remained closed.

One patient had formerly suffered from tuberculosis and there was a strong possibility that this was the cause of her sterility, though ordinarily T.B. is not a barrier to conception, except in tubercular salpingitis.

Four had worn stem pessaries and I find that these are frequently followed with non-patent tubes.

A number of these patients had chronic cervicitis and endo-cervicitis and some of these conceived after clearing up this condition.

One patient had formerly been operated on for extra-uterine pregnancy and the other tube was closed.

Three of the patients had syphilis and the tubes were closed. Others in the group might have had syphilis but only those whose history was significant were sent to the laboratory for Wassermanns. It is probable that these patients also had a Neisserian infection at the same time.

Two patients suffered from dyspareunia and conceived promptly following dilatation of the vagina under anesthesia.

One patient gave a history of former peritonitis and this of course accounted for her sterility.

One suffered from frigidity and I was unable to do anything to relieve this condition.

One had complete cervical stenosis and when this was remedied patient conceived very promptly.

Twenty-three patients showed no pathology and I am at a loss to account for the sterility in this type of patient, especially where the husbands were examined and found to be potent. I am satisfied that incompatibility accounts for a small number of these, and in this, I am supported by other authors. Out of the entire series there were six pairs where the husband and wife were proven to be normal and conception did not take place. There were probably others but I was unable to obtain specimens as I only saw the patients once and found the

tubes patent and they did not return or send their husbands in for examination. The question has been asked repeatedly as to what the percentage in any given series was where both sides of the house were proven to be normal and without issue.

One patient developed secondary amenorrhea which was not relieved and consequently did not conceive.

Obesity is a frequent cause of menstrual irregularity, amenorrhea and sterility, and in such cases reduction in weight will relieve both of these conditions and the sterility. One of this series was of such a type and after reducing her weight fifty pounds she begun to menstruate normally and conceived very promptly.

In two patients who had normal pelves, and in whose husbands there could be found only an occasional feeble sperm, neither of these have been able to conceive, although the sperms were injected into the uterine cavity.

One patient who regularly sees a little blood on the 14th day following her periods has not conceived. The subject of spotting on the 14th day following menstruation has been discussed by several authors recently and I have on hand three patients of this type who have been curetted and show no pathology except a hyperplastic endometritis. One of my patients has been curetted twice within a period of two years for this condition because she was afraid of carcinoma and the laboratory report in each instance was the same. She had the same operation five years previously in another city with the same pathological report. I am watching these cases with intense interest to see what the future outcome will be.

Four patients on whom I was unable to get any air through the tubes conceived following the test. The only way I know to account for this is that the test produced a spasm of the uterine and tubal muscles and prevented the escape of air into the peritoneal cavity. Pregnancy was the goal and this was achieved.

One of the patients in this series whose menstrual periods had always been regular had a temporary amenorrhea following shock by lightning.

The following suggestions are made as an aid in the relief of sterility:

1. A pelvic examination to determine if there are any anatomic abnormalities.
2. A tubal insufflation test.
3. Insertion of pessaries in malpositions of the uterus where indicated.
4. Clearing up chronic cervicitis and endo-cervicitis.
5. Operative suspensions.
6. Removal of cervical polyps.
7. Manual dilatations in dyspareunia.
8. Reduction of weight in amenorrhea patients with obesity.
9. Plastic operations on the fallopian tubes.
10. Determining the reaction of the cervical and vaginal secretions.

11. Examination of the husband's semen where the wife is normal.

12. Limiting coitus to the likely period, from the 10th to 18th day following menstruation.

13. Enforced coital vacation.

Chairman Carter: Discussion on Dr. Ferguson's paper will be opened by Dr. Cloyce Tew of Raleigh.

Dr. Tew, before you open your discussion may I make this request: Will the Committee on Nominations please meet sometime before the end of the meeting: Dr. White, Dr. Ross, and Dr. W. B. Bradford?

Dr. Tew then presented his prepared discussion on Dr. Ferguson's paper. (Applause.)

Dr. Cloyce Tew (Raleigh): The fact that Dr. Ferguson can report the end results of 218 cases of Sterility in his own experience commends whatever he has to say to us on that subject as worthy of serious consideration. Dr. Ferguson, due to the careful reporting of his results, is aware that what appears to be the obvious results in this problem are not always the accurate ones, as the calculation of successes in this particular problem is beset with chances of fallacy, since it is notably a many-sided one—for instance, the occasional success that follows a most casual interview is not to be compared to a similar result that follows an elaborate scheme of diagnosis and treatment.

There is no doubt that our essayist has done his work thoroughly and attained a remarkable degree of success in dealing with Sterility, as evidenced by his figure of 85.7 per cent conception rate in relative Sterility; but to me, personally, it would have been more informative if instead of accepting the accomplishment of conception as a "cure" he had distinguished, *throughout,* the pregnancies resulting in normal babies from those terminating as ectopic gestation, miscarriage, or stillbirth.

I will not detail comparisons in each of the entities listed by Dr. Ferguson that required his consideration, nor of his recommendations for therapy which are, as are most gynecological methods, pretty well known; but rather will speak for a few moments in general.

The literature on this all-too-frequent gynecological problem is voluminous but, in most instances, deals chiefly with general statements; and Dr. Ferguson departing from this pitfall and actually giving us clinical data and "results" immediately sets aside his paper as worthy of comparison with the three or four other significant ones in the literature which follow the same plan and hence are useful.

Polak gives a percentage of 31.1 per cent success in his selected group but did not analyze them according to successful termination of the pregnancies.

Hunner and Wharton give a percentage of 25.0 per cent in the selected group as having accomplished conception—but when interpreted in terms of living births is reduced to 22.3 per cent.

Dickinson and Cary presented 788 personal cases and a thousand or more which they collected but made definite statements only on 73 which showed a percentage of 46.0 per cent successful conceptions but also failed to mention the number of live babies.

Macomber reports 1,070 cases of which 802 were selected for analysis and his percentage was 29.4 per cent reduced to 25.0 per cent in terms of live births.

By assembling these results giving a total of about 5,000 cases, according to Meaker's method and interpretation, we can say that:

A—Of all Baren couples who seek Gynecological help 19.7 per cent ultimately conceived; the pregnancies terminating abnormally for 1.6 per cent, and normally for 18.1 per cent.

B—By further selection, including only those with proper follow-up and who accepted all proposed therapy and investigation the figure is then 29.9 per cent for those that obtained pregnancies and a live baby yield of 24.2 per cent.

If Dr. Ferguson's cases could be reduced to such a common denominator, even by the most restricted interpretation and correction, they would certainly give a higher percentage of success than in any of these reported including the very excellent series of Titus and it is for this reason that I believe what he has given us constitutes a distinct contribution to this problem.

One feature of sterility, or Gynecological infertility, however, not touched upon by Dr. Ferguson and one which I believe to be a real factor in certain cases is that of deficient ooegenesis—in which not only is the mature ovum not produced as a rule but also when and if produced lacks adequate vitality due to an impoverished background of contributing hormonal factors. I offer this as a conjecture that might shed possible light on Dr. Ferguson's series of 23 patients who although possessing no demonstrable pathology yet failed to conceive; and it is possible that they might fall under this group. With the recent advances in the field of endocrinology and X-ray therapy, namely stimulation of the Ovaries by irradiation and the use of Anterior Pituitary Hormanal agents—Ova are now produced that are normal and capable of fertilization where none existed before, we may soon therefore, be able to further split this fraction of infertile patients to an irreducible minimum.

I have enjoyed Dr. Ferguson's paper and appreciate the courtesy of the floor to open the discussion.

Chairman Carter: Dr. Ferguson's paper is now open for general discussion.

Dr Ruark?

Dr. R. J. Ruark (Raleigh): I noticed Dr. Ferguson mentioned a suspension operation. I wonder how many cases of sterility would be cured by a simple suspension. I am rather hesitant about doing a laparotomy for suspension, and I never have done one for plastic operation on

a tube because of the low percentage of success that has been obtained in the very best of hands.

I have enjoyed this paper a great deal.

CHAIRMAN CARTER: Is there any other discussion?

DR. W. Z. BRADFORD (Charlotte): Gentlemen, there is one phase of this problem that has been inferred by both the speaker and the discusser that I would like to enlarge upon very briefly.

Dr. Ferguson mentions the efforts directed toward reduction of weight, and Dr. Tew mentions deficient oogenesis. From the standpoint of the clinical approach to these two things I think we must direct our attention to the thyroid setup. We have had some very striking results recently in cases of sterility that have gone the rounds of various types of therapy after putting them on thyroid for various lengths of time.

The role of the thyroid in deficient oogenesis of course is a matter of conjecture, but certainly it is true that both sperms and ova are stimulated by thyroid, and many patients can possibly be raised to the threshold of fertability by adequate thyroid therapy.

In this light it has been very interesting to note that a number of our cases who have conceived, who were proven first to be definitely hypothyroid, and who conceived after thyroid therapy have been potential cases for toxemic pregnancy.

The role of toxemias in pregnancy is too broad to discuss here but certainly there is enough here to indicate that lack of sufficient thyroid might possibly be a factor in toxemias of pregnancy, and certainly the endocrine type of patient with a metabolic disturbance who is sterile, when she does conceive, her conception is apt to be fraught with difficulties of a toxic nature. (Applause.)

CHAIRMAN CARTER: Does anybody else want to discuss this paper? Dr. Ferguson, do you have a few concluding remarks?

DR. FERGUSON: I will merely say in concluding that the subject of mal placement of the follicle is a big subject, and I didn't attempt to take it up in this paper. I have prepared a paper which I have been invited to present to the Salisbury Medical Society at the end of this week, in which I go into that subject very fully.

CHAIRMAN CARTER: Has the committee any report?

DR. ALEX WHITE (Asheville): Dr. Frank Sharpe from Greensboro has been proposed as Chairman for next year, and I move his election.

CHAIRMAN CARTER: Are there any other nominations

The motion was duly seconded, put to a vote and carried.

CHAIRMAN CARTER: Good, Dr. Sharpe, won't you come up and let them see you? (Applause.)

The last paper on the program is by Dr. Leslie Lee of Kinston on "The Treatment of Pelvic Infection."

Dr. Thomas Leslie Lee: Mr. Chairman, Members of the Section: There are as many different modes of treatment of pelvic infections as there are physicians, I suppose, and I am not going to attempt to discuss them all, so if I leave out your method, bring it up in the discussion.

Dr. Lee then presented his prepared paper. (Applause.)

THE TREATMENT OF PELVIC INFECTION

Thomas Leslie Lee, M.D.
Kinston, N. C.

The treatment of pelvic infection dates back to the very earliest days of gynecology. It was Lawson Tait who proved gonorrheal infection in the pelvis to be a disease primarily of the Fallopian tubes and not of the pelvic connective tissue. The proof of the primary pathology of the infection by no means settled the mode of treatment. This controversy is still eminent as is manifested by the extensive literature which has accumulated on this subject.

That the mode of infection and rationale of therapy may be better understood certain anatomic and pathologic considerations of the female pelvis are in order. 1. The pelvic viscera are in a way isolated from the abdominal cavity by the pelvic peritoneum. The peritoneal reflections in this area may be illustrated by taking a piece of thin cloth, attaching it to the walls of the pelvis and tucking it snugly around the pelvic viscera. 2. The space between the recto-vesical fascia and peritoneum is filled with loose connective tissue known as the pelvic connective tissue. The function of this connective tissue is to fill all vacant spaces and allow free movement of all pelvic viscera. The principle collections of connective tissues are at the base of the broad ligament and around the cervix. This collection of connective tissue is spoken of as the "parametrium." 3. The pelvic viscera and connective tissue are extremely rich in blood vessels and lymph glands.

The pathological picture encountered in gonorrheal infection and that found with other organisms varies greatly. In gonorrheal infection the pathology is primarily in the Fallopian tubes, while in infections due to other organisms the pathology is primarily in the blood vessels, lymphatics and cellular structures or parametrium. The pathological picture encountered in these two types of infection is due not to biological differences in the causative organism, but to a difference in the mode of extension of the infection. The gonococcus gains entrance to the pelvis by extension through the Fallopian tubes. The primary lesion, therefore, is one of this structure. The infection extends from within out, that is, from the mucosa to the serosa. Due to these facts there is a tendency for the gonorrheal infection to remain localized within the pelvis.

Other infectious organisms (streptococcus, staphlococcus, colon bacil-

lus, etc.) extend from the uterus and vaginal tract by an entirely different route. Extension of the infection in this instance is directly through the walls of the uterus, their avenues being through the uterine sinuses, blood vessels, lymphatis and into the cellular structure of the pelvis. Thus, instead of beginning with an infection which tends to be localized as in the gonocceal infection, a widespread cellulitis in an area richly supplied with blood vessels and lymphatics is present from the beginning.

The above facts are of great importance especially in regards to mortality and morbidity and have some effect upon treatment. Pelvic infections are, therefore, usually divided into two classes. 1. Those due to the gonococcus. 2. Those due to other organisms (puerperal and post-abortive).

To which class infection within the pelvis belongs has little bearing upon the treatment, as the treatment for all is essentially the same. The stage of infection, that is, whether acute or chronic, does have great bearing upon the treatment.

Acute Pelvic Infections

The question of the treatment of acute pelvic infection is fairly well settled. There can be no doubt that conservative treatment gives uniformly good results. Since the advent of conservative therapy in acute pelvic infection there has been much less chronic infection. This is due to less instrumentation, less operations, and less manipulation. In acute pelvic disease good tonic and supportive treatment must be given, consisting of adequate sexual, mental, and physical rest, proper elimination, proper diet, plenty of fluids, and control of pain. Pain should be controlled by the use of ice bags over the lower abdomen and by the administration of some of the coal tar analgesias or the use of narcotics when the occasion arises. Vaginal examinations and local vaginal treatments should be reduced to a minimum during the acute stage of the infection. The use of vaccines and filtrates are of questionable value in the treatment of acute infections.

Of distinct value in the treatment of acute infection is non-specific protein therapy in the form of sterile milk or some of its commercial preparations. It is given in doses of five to ten cubic centimeters intramuscular (preferably in the gluteal muscle) daily until the temperature, tympanities, and pain are improved. The interval is then lengthened to twice a week.

Relatively recently another drug has been added to our armamentarium, Sulfanilamide. Elaborate claims have been made for this drug in the treatment of gonorrhea. As would be expected the percentage of cures reported following its use varies from 45 per cent to 97 per cent. In my own experience relief of symptoms could be attributed to this drug in approximately fifty per cent of the cases. When relief is obtained

it usually occurs in a shorter time than with other methods. The dosage usually has been eighty (80) grains the first day, sixty (60) grains the second day, forty (40) grains the third day, and twenty (20) grains per day thereafter, depending upon the subsidence of the symptoms. The results have been much better in puerperal and post-abortal infections than in gonorrheal infections. After the gonorrheal infection reaches the pelvis my own results with Sulfanilamide have been disappointing. The side or toxic manifestations of the drug, malaise, rash, headache, dizziness, palpitation and cyanosis (due to Sulf. and methemoglobenia) have been observed and at times are quite annoying to physician as well as patient. One patient under observation for puerperal sepsis developed the typical signs and symptoms of agranulocytosis, namely, generalized aching, mouth and throat lesions, cervical glandular adenophathy, chills, fever, and marked leucopenia with the appearance of some immature cells. The symptoms came on after the administration of one hundred and forty (140) grains of the drug. On withdrawal of the drug the symptoms and signs subsided and in three weeks the blood count had returned to normal. Sulfanilamide is not a harmless drug. Patients under treatment must be watched for untoward symptoms. They should be seen every day, especially while the large doses are being given.

Blood transfusion still holds an important place in the treatment of acute pelvic infections, especially of puerperal and post-abortal origin. Whole blood should be given liberally. The transfusion need not be in such large amounts, three hundred (300) to five hundred (500) cubic centimeters, but should be repeated often during the acute stage of the disease.

None of the above methods of treatment are a panacea. Each case is a law unto itself and must be treated as such. In the majority of cases a combination involving all methods must be used.

It must be remembered that gonorrheal infections have a tendency to become localized and heal if no treatment is instituted. A great number of acute pelvic infections never come under the care of a physician and they heal without morbidity. On the contrary, puerperal and post-abortal infections have a tendency to spread. Practically all come under the care of a physician and the mortality and morbidity is very high. These facts must be considered in the evaluation of the results of any and all methods of treatment.

The newer methods of treatment, be it vaccines, filtrates, non-specific protein, Sulfanilamide, or blood transfusion, have accomplished much aside from their therapeutic value. In conservative treatment attention is directed away from operation, manipulation or instrumentation, thus giving the infection a shorter course with less mortality and less morbidity. The only operative treatment recommended in acute pelvic infection is the drainage of pus when such accumulates. This drainage should be done through the most dependent portion and that is through

the vagina. Drainage is resorted to much less often than formerly. Many large pelvic abscesses will literally melt away under conservative treatment. This is especially true of gonorrheal infections.

Chronic Pelvic Infection

All that has been said regarding the treatment of acute pelvic infection is true of chronic pelvic infection. Conservative therapy should always be tried diligently before any operative procedure is considered. Curtis has definitely demonstrated that the gonococcus does not remain alive in the pelvis more than two weeks following the subsidence of the fever. The same is probably true of other infections. The time may be some longer in the case of streptococcal infection. No woman should be operated upon immediately following an attack of pelvic inflammatory disease. Months and sometimes years should elapse before any such procedure is advised. Many very acutely inflamed pelves will return to normal with normal physiologic function and without morbidity if sufficient time is allowed.

Operations for chronic pelvic infection are performed not for the infection but for the results of the infection. The most prominent of these being: 1. Adhesions with symptoms. 2. Uterine bleeding. 3. Symptomatic displacement of the uterus. 4. Tubo-ovarian abscess and hydrosalpinx. All these conditions are easily diagnosed by bi-manual examination. If the physician cannot without difficulty palpate the pathology, then it is usually not present. The pre- and post-operative diagnosis should agree in at least 90 per cent to 95 per cent of the cases.

No acutely inflamed pelvis can be operated upon with safety. Certain criteria of chronicity must be present before operation can be safely performed. There must be no elevation of temperature even after vaginal examination. The leucocyte count must be normal and the sedimentation rate must not be increased. If these criteria are present the primary operative mortality will be very low.

When operation is resorted to the tubes and fundus of the uterus should be removed. If the uterus is left many cases of troublesome uterine bleeding will result. During the acute stage of the infection the function of the ovaries becomes impaired, thus giving rise to excessive uterine bleeding. If the fundus of the uterus is not removed along with the tubes, the bleeding will persist and probably require another operation. The surgery of the ovaries should be as conservative as is possible. No more ovarian tissue than is absolutely essential should be sacrificed. If both ovaries must be removed then a transplant of ovarian tissue should be made into the rectus muscle. However, a much better procedure is to dissect the diseased tissue and leave the small piece of ovary in situ.

There is a class of chronic pelvic infection in which the primary focus is extrapelvic. Reference is made to the lymphadenitis resulting from

chronic infection in the cervix. By absorption the pelvic lymph glands, especially those in the pelvic connective tissue under the bladder and broad ligament become enlarged. These glands become painful and symptoms are produced which closely resemble those of cystitis, salpingitis and oopharitis. The differentiation is made in most instances upon the presence or absence of a palpable adnexal mass or the presence of a chronically infected cervix. The utero-sacral ligaments also become endurated and produce much pain and discomfort. If chronic cervical infections are treated and alleviated the painful symptoms from pelvic lymphadenitis is also relieved. It is for this chain of symptoms that many laparotomies are performed. The pelvic viscera and appendix are found normal. In an effort to cure the symptoms a normal ovary, tube or uterus is sacrificed or hysteropexy performed on a freely movable displaced uterus. If the cervix has been closely examined and given proper treatment the symptoms would have been relieved and the patient saved the expense and risk of abdominal section.

The Sturmodorf operation and the use of the actual cautery or coagulation current are the usual procedures employed for the alleviation of cervical infections. One must be sure the infection is chronic when these procedures are employed. In the acute stages of pelvic infection many untoward complications are apt to develop following their use.

The question of pelvic infection cannot be left without some reference to the increased number of criminal abortions. The percentage of pelvic infections from this cause is increasing annually. They occur in the married and single, young and old, rich and poor, urban and rural, society matron and street walker, the college graduate and the illiterate, in fact, no element of society is exempt. Why this increase in the number of criminal abortions? Is the abortionist more active? Has our moral code been lowered? Is the medical profession too busy or too indifferent to prosecute the criminal abortionist? Are our laws as regards abortion antiquated? The answer I do not know. Before our maternal mortality is lowered acute and chronic pelvic inflammation from this cause must also be lowered.

Chairman Carter: The discussion on Dr. Lee' paper will be opened by Dr. deCamp of Fayetteville.

Dr. deCamp.

Dr. deCamp then presented his prepared discussion on Dr. Lee's paper. (Applause.)

Dr. Allen Ledyard DeCamp (Fayetteville): Dr. Lee has thoroughly covered the methods of treating pelvic infections. I wish to take only a couple of minutes of your time to emphasize a few points.

In cases where inflammation does not rapidly subside under rest in bed, and local application of heat, vaccine or bacteria treatment may be given, but as good or better results may be obtained from the larger doses

of foreign protein supplied by the intramuscular injection of milk. This method is being used with considerable success in acute and subacute pelvic infections.

In the past few years many laudatory reports have been made for the Elliott method of applying heat to the vaginal vault by the continuous circulation of hot water. On one of the heavy gynecological services at Philadlephia General Hospital a couple of years ago, the number of pelvic inflammatory cases coming to operation fell close to the vanishing point following the installation of a battery of Elliott machines.

I wonder, however, if we are not giving foreign proteins and heat applicators credit for more than they deserve? May it not be that it is Nature, now given enough time, that takes care of the resolution of the inflammatory process?

Of course, the finding of pus low in the pelvis, calls for opening and draining through the vagina. If a mass of exudate that may or may not contain pus is found high in the pelvis, it is best not disturbed during the acute attack. Abdominal operation should be avoided during the acute attack, if at all possible; the reasons being that, first, the patient will often recover completely without operation, and second, if removal of the mass finally becomes necessary, it can be carried out later with much less danger to the patient. In many old pelvic abscesses the bacteria are dead and the pus is sterile, and contamination of the field of operation fails to cause peritonitis.

Chairman Carter: Is there any other discussion?

Dr. Franklin, will you say something?

Dr. Ernest W. Franklin, Jr. (Charlotte): In the past few years, I have been very much of an enthusiast on coagulating the cervix as a means of cleaning up these chronic serological infections, and the majority of them have done very well. I have tried to be extremely careful in the cases chosen because I didn't want to get into any acute processes, and have been very successful in not producing any local peritonitis or unusual reactions from it. I like it very much better than the ordinary actual coagulating.

I think the paper as written was very good and I enjoyed it very much.

Chairman Carter: Dr. White, will you say something on this?

Dr. R. A. White (Asheville): I have nothing to add to this discussion. It has been covered. I am very strong for conservative treatments. A great many of these massive abscesses will dissolve if left alone. I am very much a believer in Nature's processes, inclined to give less credit to the therapeutic measures that we formerly thought cured the patient.

CHAIRMAN CARTER: Is there any other discussion?

Dr. Lee, will you close, then?

DR. LEE: I might say a word about the Elliott machine. I have not had much success with one of the very first ones. (Laughter.) I think I have used it perhaps twenty times since it has been on the market, and I have never seen a thing that an Elliott machine will do that time and non-specific protein won't do. Time would probably do it itself if we were patient.

As I stated in the paper, you have to treat them with something or they won't come back to you, so the least harmful thing you can do is not to manipulate them, not to operate on them, and not insert any instruments. If you follow conservative therapy that takes care of that situation. (Applause.)

CHAIRMAN CARTER: Is there any other discussion?

Is there any business to come before the session? Is there any business any member wants to bring up? If not, we will adjourn until next year, when Dr. Sharpe will take the Chair.

Whereupon the session adjourned at 4:30 o'clock.

SECTION ON PEDIATRICS

TUESDAY AFTERNOON

MAY 3, 1938

The Pediatrics Section of the Medical Society of the State of North Carolina convened at 2:25 o'clock in the Men's Card Room, The Carolina, Pinehurst, Dr. Kenneth B. Geddie presiding as Chairman.

CHAIRMAN GEDDIE: The meeting will please come to order.

I believe that there are a number of men present from the Section on Psychiatry. They were invited to meet with us this afternoon. I would like to welcome those members who are here and ask and urge that each one of them discuss the papers as they are presented.

It is customary to appoint a committee to judge the best paper, or the most deserving paper, for consideration of the Moore County Award. I would like to appoint as Chairman of that committee Dr. Thomas M. Watson of Greenville, and to serve with him, Dr. L. W. Elias of Asheville, and Dr. Aldert S. Root of Raleigh.

Two years ago, I believe, Dr. Root made the suggestion, and it was acted upon, that we have not only a Chairman but a Vice Chairman elected each year, the Vice Chairman to act as Secretary for the Section. I would like to appoint as a Nominating Committee to present names for the prospective Chairman and Vice Chairman for the coming year, Dr. S. Stewart Saunders of High Point to act as chairman, Dr. J. R.

Ashe of Charlotte, and Dr. R. B. Hare of Wilmington. That committee will meet at their convenience and report to the Section at the end of the program.

The committee for the consideration of the best paper for the Moore County Award will please report to me at the close of this meeting.

I have chosen, as the subject for the Chairman's address this afternoon, "Diphtheria Immunization and Diphtheria Immunity." It will overlap somewhat Charlie's paper, which he so ably presented this morning, but not so much as to not bear repeating, I think.

Chairman Geddie presented his prepared paper.

DIPHTHERIA IMMUNIZATION AND DIPHTHERIA IMMUNITY

Kenneth B. Geddie, M.D.
High Point, N. C.

In recent years immunization against diphtheria has received more attention from pediatrists and health workers than any other phase of preventive medicine. It is not my purpose to attempt to review the voluminous literature on the subject. In preparing this paper I asked the cooperation of all the pediatrists of the state. I secured a moderate number of responses and for these I would like to express my sincere thanks. The value of diphtheria immunization is unquestioned. There is still some question as to the ideal method to be used. The object of this paper is to determine the best material to be used, the dose, interval between injections, the ideal age, when and how often Schick tests should be repeated. These facts are not primarily for the benefit of the pediatrists but should be much more important for the general practitioner of medicine and the health officers since it is these two groups who do a large part of the diphtheria immunizations in this state.

Just what does a negative Schick test mean? It means that 1/10 of a cubic centimeter containing 1/50 M.L.D. of diphtheria toxin has been given intradermally and that four days later there was no evident local reaction. It certainly does not necessarily mean that a child has a high degree of immunity to diphtheria. It does mean that this amount of antitoxin is sufficient to prevent infection. A larger amount might give greater protection and insure a longer average immunity.

Just what do you mean when you say that you give 1 cc. of toxoid or 1 cc. of alum precipitated toxoid? It means absolutely nothing unless you know how many antigenic (Flocculation) units that particular cubic centimeter of toxoid contains. As a general rule it can be stated that the more antigenic (Flocculation) units given the higher will be the antitoxin content of blood. Every package of diphtheria antigen put out for use by the general profession should show on the label the number of antigenic (L.f.) units contained in each cubic centimeter. Most of the

commercial toxoid contains at least 10 antigenic (L.f.) units per cubic centimeter. One preparation contains 22 antigenic (L.f.) units per ½ cc. and seems to give no more local reaction than do the less concentrated antigens. It is potent in proportion to the number of antigenic units contained rather than according to the number of minims each dose contains. I think that almost everyone agrees that both plain and alum precipitated toxoid are superior to the old toxin antitoxin.

As to the age at which an infant should be immunized there is some question. Several years ago Park stated that in a small series of cases he found that children between 5 and 6 months reacted as well as older children but that this was not so in children under 2 months. But he added that a larger series might not confirm these statistics and suggested that immunizations should be done from 6 to 9 months of age. In rural communities he suggested 6 months because so many of these children had no immunity to carry over from their mothers. Greengard's results in attempting to immunize young infants confirms Park's statement. In his group of infants who failed to respond to vaccination with sufficient antitoxin to render their reaction to the Schick test negative, all with one exception, fell in the age group below 6 months. In addition, of those infants who reverted to a positive reaction later, all but one were immunized under six months of age. Thus we see that the age factor is quite an important one both as to the formation of antibodies as well as in the persistence of immunity, once immunity has been established.

If one dose of alum precipitated toxoid will give us as many negative Schick tests and if this immunity persists, then this method will certainly be most desirable because simplicity, efficiency, and persistency of immunity are much to be desired. When considering diphtheria immunization the well known experimental observation that the first or primary response to the diphtheria antigen is slow, feeble, and transient, but the secondary response following a later antigen stimulus results in rapid, pronounced, and persistent antitoxin formation should always be kept in mind. From this it would appear that certainly for young infants the one dose method would not be the ideal method to use. Certainly for the children of North Carolina, most of whom live in small towns or rural communities, it would seem logical to use a method of immunization comprising more than one injection which should not be given before 6 months of age. Schick tests should be done after 6 or 8 weeks and repeated every year or two at least during the first half of childhood. This would seem particularly important because living as we do in rural communities most of our patients would miss the more or less frequent antigenic stimulus from diphtheria bacilli in the environment which a city dweller would of necessity receive. Apropos of this, several years ago I did Schick tests on 464 rural children between 5 and 6 years of age and found that 98 per cent had positive Schick tests and two of

these had had diphtheria. Schick and Topper found 75 per cent negative tests in a group of children under six years of age but this group came from one of the most congested districts of New York City. It is of primary importance to us when we are reading statistics on diphtheria immunity to know where those statistics were gathered. There is a marked difference in susceptibility between children living in congested districts and those living in rural communities.

As to the interval between doses, various men suggest from two weeks to two or three months. I believe that it is the concensus of opinion among the men who are actually doing private practice that an interval of from two to four weeks gives satisfactory results and that if a longer interval is used many of the patients will not return for the second dose. Park states that intervals longer than two weeks have no advantage but Cooke is of the opinion that unquestionably the best method of diphtheria immunization is to administer two doses of alum precipitated toxoid at intervals of one to several months.

Since my statistics contain only a limited number of cases, it might be well to briefly review a few comments from the literature. There are many reports to show that three doses of toxin antitoxin gives a slowly developing immunity in 60 to 70 per cent of the cases and that many of those return to positive in two or three years. Five doses of toxin antitoxin given at weekly intervals gives 90 to 95 per cent of negative Shick tests in six months. I did not happen to find a group who had been retested after several years so I do not know how long this immunity is retained. Certainly three doses of toxin antitoxin are not efficient and five doses are not convenient. Cooke found that three doses of plain toxoid at three week intervals gave very satisfactory results as did also two doses of alum precipitated toxoid at intervals of one month or longer. It is fairly generally agreed that plain toxoid (Ramon Anatoxin) given in two 1 cc. doses will result in a negative Schick test in six to eight weeks in 75 per cent to 85 per cent of cases. It is also fairly evident that this percentage can be increased to something more than 90 per cent. By giving three doses of plain toxoid to 562 pre-school children at two-week intervals, I secured 98 per cent negative Schick test three months later. As to one dose of alum precipitated toxoid there is a more widely divergent opinion. Alfred A. Walker reports that four or five months following one dose given to 1,789 children the Schick test gave 100 per cent negative reactions. This group was not retested to learn how long they retained this immunity. Cooke on the other hand states that one dose of alum toxoid failed to immunize 20 per cent of his group of nurses but adds that one more dose did immunize all of the other 20 per cent. Park states that two doses of alum toxoid immunized 96 to 98 per cent of a large group of preschool children.

Antigen Used	No. of Doses	Amount in Each Dose	Interval Between Doses	Total No. Immunized	First Schick Test: No. Neg.	First Schick Test: Per Cent Neg.	First Schick Test: No. Pos.	Total No. Re-Schicked	Second Schick Test: No. Neg.	Second Schick Test: Per Cent Neg.	Second Schick Test: No. Pos.
T.A.T.	3	1 cc.	1 wk.	173	151	87.2	22	101	91	90.0	10
T.A.T.	5	1 cc.	1 wk.	312	287	92.0	25	105	100	95.2	5
P. Toxoid	3	1 cc.	2 wks.	384	377	98.2	7	191	184	96.2	7
A. Toxoid	1	1 cc.		350	332	94.8	18	114	105	92.1	9
A. Toxoid	1	½ cc.	4 wks.	24	24	100	0	14	13	92.8	1
A. Toxoid	3	½ cc.		51	51	100	0	40	40	100	0
Total				1,294	1,222		72	565	533		33

Analysis of Table

A series of 1,294 children ranging in age from six months to six years of age—most of whom were from six months to one year of age—were immunized against diphtheria. Three antigens were used.

1. Three 1 cc. doses of toxin antitoxin were given at weekly intervals to 173 children. When Schick tested six months to one year later 87.2 per cent were found to be Schick negative. One hundred and one of these were re-Schicked from three to ten years later and it was found that 10 per cent had lost their immunity and were again Schick positive.

2. Five 1 cc. doses of toxin antitoxin were given at weekly intervals to 312 children. When Schick tested six months to one year later 92 per cent were Schick negative. One hundred five of these were re-Schicked three to twelve years later, and 95 per cent gave negative Schick test.

3. Three 1 cc. doses of plain toxoid (Ramon anatoxin) were given at two-week intervals to 384 children. Schick test two to eight years later and 96.3 per cent were found to retain their immunity as evidenced by negative Schick reactions.

4. Three one-half cc. doses of alum toxoid were given at four-week intervals to 51 children. Four weeks after the last injection all had negative Schick tests. When 40 of these were Schicked a second time five years later all showed negative Schick reactions. This toxoid contained a minimum of 22 antigenic (Flocculation) units per one-half cc.

5. One one-half cc. dose of alum toxoid (as above) were given to 24 children. When re-Schicked eight weeks later all gave negative Schick reactions. Five years later when 14 of these were re-Schicked only one showed a slightly positive reaction.

6. Three hundred and fifty (350) children were given one 1 cc. dose of alum toxoid and when Schick tested six weeks to three months later 94.8 per cent showed negative reactions. Of this group 114 were re-Schicked two to eight years later and 92.1 per cent had retained their immunity as evidenced by negative reactions.

From this study there were a few more things of interest which this table fails to show. When the first attempt at immunization of an indi-

vidual failed, a second attempt, using the same or any one of the above mentioned methods promptly caused a reversion of the Schick test in every case of which we have a record, except one. This immunity, as shown by subsequent Schick tests, was a persistent one. This one patient was rather interesting in that each of the three times that she was immunized, she promptly became Schick negative but at each subsequent Schick test it was found to be markedly positive. She had no difficulty in producing an immunity but neither did she have any difficulty in losing it. She is now in the process of being immunized with alum toxoid.

Older children were as a general rule not so easily immunized as the group under six years of age. Uncomfortable local and occasional mild general reactions were found much more frequently in the older children.

While checking over our records we were amazed to find the number of infants which we had seen fairly regularly since birth whom we had failed—for one reason or another—to immunize.

Again we were amazed when we checked over our charts to find that we had failed to follow up our diphtheria immunizations with Schick tests in more than one-half of the cases. I have an idea that many of you here would be equally startled if you would take the time to check your own results. There must be something radically wrong with my method or something wrong with the spread of information to the lay public when such a condition exists.

So far as I know only one child in this group has had diphtheria. This was a child who at six months of age had been given two doses of T. A. T. At 18 months the Schick was negative and at four years the child had a mild diphtheritic infection from which she recovered without antitoxin. Several other men have told me about cases of diphtheria occurring in children previously immunized to diphtheria. As I recall, none of these had been Schick tested. Obviously it is possible to contract diphtheria after immunizing agents have been used because no method as yet has been found which produces 100 per cent results. And since no method has been found whereby immunity can be made to persist forever in 100 per cent of the cases we will doubtless in the future as in the past be occasionally confronted with just such cases.

As a brief summary then I would say, that from the information which could be gleaned from the tabulated cases as mentioned above and from a rather cursory review of a little of the recent literature plus more recent reports from Doctors Cooke and Park, that in North Carolina the most nearly ideal method of diphtheria immunization would be to start immunization at six months, to give two doses of alum toxoid, each dose to contain not less than 10 antigenic units. These two doses to be given at an interval of one month. A Schick test to be given two or three months later and repeated once a year for two or three years and less frequently during later childhood.

Chairman Geddie: The next paper is "Rocky Mountain Spotted Fever," by Dr. Ward of Asheville.

Dr. Ward: Mr. Chairman and Members of the Section on Pediatrics: This paper would more porperly come before a General Session, but when I suggested that to our Chairman, he informed me that Charlie had preëmpted the place, so I have to read it here. I don't think you need it. I think he did much more good with his paper than I could have done with mine.

Dr. Ward presented his prepared paper, making the following interpolation preceding the words, "H.H., female—8 years old," on page 340: I would like to say that Dr. Elias was kind enough to assist me in the care of this patient. (Applause.)

ROCKY MOUNTAIN SPOTTED FEVER

John LaBruce Ward, M.D.
Asheville, N. C.

Rocky Mountain Spotted Fever belongs to the typhus-like group of diseases, of which the best known are epidemic typhus fever (carried by lice from man), endemic typhus fever (carried by fleas from rats), Rocky Mountain spotted fever, western type, and Rocky Mountain spotted fever, eastern type (carried by ticks from animals), and tsutsugamushi disease which is conveyed by mites from field mice. These three groups differ not only clinicly but have been differentiated by cross-immunity experiments, therefore, though closely allied, they represent separate clinical entities. The causal organism is rickettsia, so named in honor of Ricketts who recognized it in 1906 and offered himself as a sacrifice on the altar of science. This minute dipliform bacillary organism supposedly represents a new group intermediate between bacteria and filtrable viruses (Parker). It grows only in tissue cultures, is not filtrable, is found in the alimentary tract of ticks and, intracellularly, in the endothelial cells of man. The ticks usually responsible for infecting man are the wood tick of the Rocky Mountain (Dermacentor andersoni), and the American dog tick (D. variabilis). The rabbit tick (Haemaphysalis leporis-palustris), according to Parker, may convey the disease, but is not fond of homo sapiens and carries only a mild strain of spotted fever. The disease was first reported in Montana in 1873, first described as a clinical entity by Maxey in 1901, and first reported from the eastern United States in 1930. Two years later, the first case in this state was reported from Durham County. In 1933, twenty-seven cases were reported from eleven counties, and up to June 26, 1937, there have been a total of 143 cases reported from 37 counties. From 63 counties no cases have been reported. Whether this is due to the inactivity of the ticks or of the physicians in these counties, is a matter of conjecture. If the former, the residents of these counties are to be congratulated; if the

later, commiseration were more fitting. Of interest is the fact that of the 143 cases reported, 98 were from the central portion of the state and 28 from the eastern portion. Randolph and Guilford counties alone reported 26 per cent of the total while only six cases were reported from the extreme eastern section and none from the extreme western until the case to be presented was reported from Buncombe in June 1937. In differential diagnosis, the greatest difficulty lies in deciding between endemic typhus fever and Rocky Mountain spotted fever. Whether the significance, it should be noted that the distribution of the two diseases, by counties, and their seasonal occurrence are by no means parallel. For instance, east of a line drawn from Halifax to Brunswick counties, there were reported only 17 cases of spotted fever and 75 cases of endemic typhus. In Craven and New Hanover counties there were reported five cases of spotted fever and 57 of endemic typhus. While almost 50 per cent of the cases of spotted fever occurred in July and August, endemic typhus showed a more even monthly distribution, 50 per cent of them being reported from July through October. The relatively small number of cases of both diseases appearing over a large area and fallibility of diagnosis, without laboratory aid, does not justify conclusions as to the relative frequency of the two diseases. None the less, during 1937, there were six cases reported from counties which previously had reported none. Spotted fever is transmitted only by the tick, most rodents and some small carnivores being hosts of larvæ and nymphs, while the adult ticks feed on large animals. It is well that only 2/5 per cent of ticks (even in epidemic areas), are virus carriers (Parker), since tick virus is so highly infectious that one cc. of it may contain 1,500,000 minimum infectious doses for a guinea pig. *Per contra,* the same quantity of blood virus contains only 1,000 M.I.D. The disease is not carried from man to man. The reservoir of infection is maintained thus. The virus survives cold weather in infected nymphal or adult ticks. In spring, the infected females engorge and from some of them the virus is carried on through the eggs to some of the resultant larvæ. At the end of the winter when one of these recently hatched infected larvæ (or a nymph), feeds on a susceptible rodent or other host, the latter becomes infected, and, through the medium of this host, the virus is *acquired by previously uninfected* larvæ or nymphs and these, by the next spring, have developed to infected nymphs or adults which carry on the family tradition. Following is the brief history of a case seen by us:

H. H., female—8 years old. Patient has had no acute illness except pneumonia several years ago, and has been immunized against diphtheria, pertussis, and typhoid fever. On May 26, she appeared droopy and two days later had a chill. Within a few hours the temperature was 103. It lasted for nineteen days, with morning remissions. On two occasions it reached 105. On the 17th day it fell by crisis only to be followed within 24 hours by a slight chill and temperature of 103. On the first

day of the illness, she did not appear to be acutely ill, although with an anxious expression. Subjectively, she had severe headache and general muscular soreness. On the abdomen were three small rose spots. Because of the extreme muscular soreness, it was impossible to palpate liver and spleen or to elicit Kernig or Babinski signs. On the third day of the fever there were numerous rose spots on the abdomen, legs and chest and, later profuse macular eruption on the face, legs, arms and soles. The rash assumed a purplish and later a brownish hue so that the face, where it was most profuse, assumed the appearance of a turkey egg. At this stage, the rash did not entirely disappear on pressure, however, there were neither petechiæ nor enanthem. The outstanding feature was the extreme muscular soreness, particularly over the abdomen. There was anorrhexis, constipation, and alternating excitement and stupor, the latter more frequent and marked. Later there was a well marked desquamation and on the soles, a peculiar appearance, isolated, irregularly shaped lesions which were blanched in contrast to the surrounding. Three days prior to the illness, the mother removed a tick from the skin of the patient, which was nothing unusual. The blood count showed nothing remarkable. The tests for Malaria, syphilis, typhoid, tularemia, and undulant fever were negative. A specimen of blood sent to the National Institute of Health for a Weil-Felix test was reported positive to proteus agglutination in a dilution of 1-1200. This proved that we were dealing with a case of either spotted fever or endemic typhus and Dr. Dyer, after reading the history, was of the opinion that it was the former.

While the differential diagnosis between spotted fever and endemic typhus may be impossible without laboratory aid (and at times, with it), certain points are worth considering. In spotted fever, the temperature is higher and lasts about three weeks, while it nearly always ends in two weeks in the other disease. The rash includes palms and soles, in spotted fever but rarely in typhus. In the latter, it lasts only two to nine days while in the former it lasts much longer and may become petechial. Also the pulse rate is very high in spotted fever and very low in the other disease. In the final analysis, we must rely upon the laboratory, else we will be deceived by Jacob's voice when the hand is that of Esau.

The laboratory tests employed are the infection tests, the Weil-Felix reaction and the protection test. If the blood from a suspected person is injected, intraperitoneally into a male guinea pig, there will occur swelling and sloughing of the scrotum if the disease is spotted fever, except in mild cases. Three or four cc. of whole blood should be used. It is better to send an inoculated guinea pig to the laboratory, rather than a specimen of blood. Parker holds that the Weil-Felix reaction is the most reliable, "the test of the patient's serum for aggultinins against O strains of Proteus X19 and X2." He considers a titer of 1:320 the lowest that is definitely diagnostic. "One sample of blood should be

taken as soon as the disease is suspected and another between the tenth and fifteenth day after onset." If rabbits are inoculated with the virus of the patient a differential diagnosis can be made between spotted fever and endemic typhus. The protection, or virus neutralizitation test, is of great value. Mixtures of serum and serum virus, (the latter in varying strengths), are injected into guinea pigs while the controls receive only the serum virus. The samples should be taken only after convalescence, in contradistinction to blood taken for the other two tests. While the treatment of the disease can be only symptomatic, there is a vaccine prepared by the U.S.P.H. Service Laboratory at Hanilton, Mont., which is very efficacious for one season. Two doses of 2 cc. each are given at 5 day intervals. In the highly fatal type of the disease, the protection afforded children seems to be much higher than that for adults. Aside from the use of vaccine, reliance can be placed only in avoiding contact with ticks by proper clothing or in removing them promptly from the body. The latter would seem a glad sweet song to those of us who have had experience of the "crawlin furlie," immortalized by Bobby Burns. If your pet dog is to be rid of ticks, let me admonish you to use rubber gloves or somebody else's hand. We need not be told new things so much as to be reminded of that which we knew. It is to be hoped that this presentation will result in that clinical awareness which alone stands guard over the many diagnostic pitfalls which beset the paths of each of us.

Chairman Geddie: I don't have to write very interesting papers when I can get every other paper to wake up the crowd. I knew you would be good and sleepy after my paper, and I knew you couldn't possibly sleep through Bruce Ward's. His paper is open for discussion.

Dr. Arthur Hill London (Durham): I had the pleasure of reporting the first case Dr. Ward referred to from Durham.

There are two points which I think it would be well to bring out and emphasize. The first is that in the clinical diagnosis of this disease, of course in the final analysis the only way you can absolutely prove it is by laboratory methods as Dr. Ward has said, by the infection test and by the protection test—especially by the protection test.

Clinically, however, Dr. Ward's case differs a little from the typical, in that he noticed his rash first on the abdomen. Rocky Mountain spotted fever practically always starts on the extremities, the rash usually appearing on the wrists and ankles and then spreading centrifugally towards the body, up the arms and legs. The abdomen and the chest are usually the last to be attacked by the rash. In his case the rash started on the abdomen and spread centrifugally, and in that way it differed a little from the usual case.

In the treatment, Dr. Ward said that treatment is absolutely symptomatic. That is not quite the whole story. If you happen to live in a section where this disease occurs more than once in a lifetime, the use

of blood from a former patient is very efficacious. The first child that he referred to in his report was a child of eight who was extremely ill, who ran a temperature of 106 and 107, and was comatose. We had one man in town who had recently been reported as a typhus, and in reviewing his history and then in a review of the physical findings, we assumed that he had Rocky Mountain spotted fever, because his course was typically that of Rocky Mountain spotted fever rather than typhus. It had been diagnosed as typhus simply because Rocky Mountain spotted fever hadn't been thought of. We used his blood to transfuse to this child—his blood happened to match that of the child—and the change of the clinical course was remarkable. Subsequently, that manner of treatment has been used in several cases, either by transfusion, or securing the serum and injecting it intramuscularly if the blood doesn't match, and it does prove efficacious. If you happen to live in a section where Rocky Mountain spotted fever is rare, the use of epilobium is advantageous.

Dr. S. F. Ravenel (Greensboro): Although the eloquent essayist, impeccably correct in speech and dress always, hails from Buncombe, there was nothing of that in his address. I don't know whether the comparatively rare diagnoses, or, rather, the comparatively few cases of this disease diagnosed is due to the thickness of the skin of North Carolinians, or whether it is due to the thickness of the brains of North Carolina doctors.

I am surprised that Dr. Ward, hailing from the "land of the sky" should report a disease of this grave nature. However, I am aware of the fact that dwellers in that favored land could have such a grave disease. This disease is not very uncommon. I have seen thirteen cases in Guilford County and the counties adjacent, since Dr. London described the first case in 1932 and showed it before the meeting of the North Carolina Pediatric Society.

I think the impression is rather widespread that the disease in the Far West is very fatal but not in the East. That, as has recently been pointed out by Parker, is incorrect. In certain areas in the Far West the mortality is very low, while in certain areas, particularly ones widely popularized, it is exceedingly great. However, the mortality in the East is quite high, as high as that in lobar pneumonia, or higher. Of the thirteen cases I have seen three resulted fatally.

It is probably not my place to take it upon myself to discuss the remarks made by persons discussing the paper. However, in respect to the treatment mentioned by Dr. London, the use of convalescent serum, or transfusion from a donor presumably immunized by the disease, Packer has specifically stated that a wide experience in the use of transfusions from patients who have had the disease, and the use of convalescent serum, has proved to be of absolutely no value in treating the disease as seen in Montana.

I, myself, have seen several very severe cases which seemed to be benefited by transfusions from an ordinary donor, but it is dangerous in medicine to rest your conclusions on a very few cases.

I think it is exceedingly wise and very valuable to have our attention called to diseases such as this which do not occur commonly, because it is perfectly possible for them to occur in mild form, with a slight rash, and be totally unrecognized. I believe this is a problem that is going to be serious in this part of the country. There is nothing you can do about it because you can't vaccinate the entire population, and when a patient once has it, there is nothing you can do other than to put him to bed and to give him water.

I think it is a very timely presentation, and I enjoyed Dr. Ward's paper. (Applause.)

Dr. Lewis W. Elias (Asheville): I would like to add one point. Because of the difficulty of making a diagnosis between typhus and Rocky Mountain spotted fever, inasmuch as ticks are so much more scarce in winter than they are in the summer, there would be some point in favor of typhus as against Rocky Mountain spotted fever if the case was in the middle of winter.

Chairman Geddie: Is there any further discussion? If not, I will ask Dr. Ward to close his paper.

Dr. Ward: Mr. Chairman, I thank these gentlemen for their discussions.

Replying to Dr. London, I would say I am very much interested in the treatment with blood. I think, however, as does Dr. Ravenel, that it is probably due to the blood rather than to the antibodies that the blood might contain. Certainly Parker, who is one of the best authorities on the subject, claims that we can expect no benefit from anything. We just have to treat the patient symptomatically. This patient was so treated, and although she was very sick, she finally recovered completely, perhaps due to the fact that she was in a good climate. (Laughter.)

I would like to say that this case was not from Asheville, but came from near Weaverville. We don't have anything like that in Asheville. (Laughter.)

I agree thoroughly with Dr. London in regard to the rash being atypical. That thing is stressed quite a bit in the textbooks, the difference in the spread of the rash in the two diseases. However, Dr. Dyer was really the one who made the diagnosis. On the strength of the history of prolonged fever, high pulse, high temperature, he said that without any question we were dealing with spotted fever rather than with typhus. (Applause.)

Chairman Geddie: The next three papers constitute something of a symposium considerably different from the Pediatric programs which we have hitherto had in the Society.

Following Dr. Strecker's talk this morning, we would say, then, that this group of papers constitutes a part of the problem which is 70 per cent of the practice of medicine—not entirely physical, largely psychologic, or psychiatric.

The first paper is "Cerebral Complications of some of the Acute Communicable Diseases," by Dr. Jean McAlister of Greensboro.

Dr. McAlister: My apology for a paper on a subject about which I know so little is that Dr. Geddie was determined to have this subject discussed, and was so ungallant as to suggest that I was the only person who had plenty of time in which to review the literature.

Dr. McAlister presented her prepared paper. (Applause.)

CEREBRAL COMPLICATIONS OF INFECTIOUS DISEASES

Jean C. McAlister, M.D.
Greensboro, N. C.

Occasional instances of nervous manifestations following the exanthems have been reported since 1790 when Lucas (1) described a case of transient paraplegia after measles. The child developed smallpox later and paraplegia recurred. Within recent years attention has been directed to this group because of a decided increase in the number of cases and because of interest in a similar sindrome following vaccination for smallpox. Physicians (2) in England and Holland became cognizant of the latter condition about 1922 but were able to trace back and identify one case which came to autopsy in 1912.

Measles—Cerebral complications, while rare, probably occur more frequently in measles than in any other infectious disease. In 1928 Ford (3) collected 113 cases from the literature and added twelve. Unquestionably, the incidence of this complication is greater during certain epidemics. Neal and Applebaum, (4) in New York, saw eight cases in 1926 alone while at the same time, Musser and Hauser (5) in New Orleans were struck by its unusual frequency.

The onset of nervous symptoms is usually from the third to the fourth day after the rash appears but may be earlier or later. The clinical picture is highly variable. Headache, fever, drowsiness or convulsions followed by stupor are common symptoms, along with muscular rigidity and twitchings. From this stupor the child may recover promptly without sequellae or there may be prolonged coma with appearance of a great variety of nervous symptoms as consciousness returns.

Ford divides the reported cases into five groups. Group I is characterized by absence of focal signs and by prompt, complete recovery, explicable on the basis of intoxication of the nervous system without anatomical changes. Group II includes cases with signs of multiple focal or diffuse lesions. Group III is characterized by single focal cerebral lesions with hemiplegia and aphasia as the commonest symptoms.

Ford feels that these symptoms result from non-specific injury to the vessels which may occur in many infectious diseases. Group IV is made up of patients with cerebellar symptoms. Measles causes a large percentage of acute juvenile ataxias, being responsible for eight of 31 cases of acute cerebellar ataxia reported by Griffith (6). The Fifth Group is comprised of spinal cord syndromes.

Examinations of the spinal fluid reveal increases in pressure, cell count, and protein. The cells, predominantly lymphocytic, number from 8 to 800; cultures are sterile, sugar and chlorides normal.

Treatment is symptomatic, with special attention to reduction of intracranial pressure. Magnesium sulphate intramuscularly or by mouth may be valuable in cases with convulsions. Convalescent measles serum has been given intravenously, intramuscularly, and intraspinally and in some instances seemed beneficial.

The prognosis should be guarded though complete recovery may occur. In Ford's 125 cases there was complete recovery in 25 per cent, death in 10 per cent, while residual symptoms persisted in 65 per cent. It has been stated that out of 2,000 idiots in British institutions eleven owe their condition to measles. Elliot (7) describes the change in mental state as a limitation of mental horizon in contrast to the personality changes associated with encephalitis lethargica.

Case 1*—In November 1935, a 2¾-year-old Negro girl was admitted to the Children's Hospital of Philadelphia. Measles was epidemic in her neighborhood. The present illness began seven days before admission with cold, cough, and generalized rash. Two days later, hyperpyrexia, coma and urinary incontinence developed. Examination revealed coma, dehydration, a faint cutaneous eruption, irregular respirations, and muscular twitchings. There was hyper-reflexia and positive Babinski, Oppenheim, and Gordon reflexes were elicited. The spinal fluid was under normal tension, contained twenty-five lymphocytes per cu. mm., increased protein and chlorides. Spinal fluid Wassermann was negative. Convulsions occurred at intervals for ten days and coma persisted for weeks. Extreme muscular weakness necessitated the use of splints on the extremities. Convalescence was slow and after months there was severe ataxia. There was no return of intelligence and on discharge she was reduced to the status of a little animal. Encephalogram revealed marked cortical atrophy.

By encephalography McCausland and McClendon (8) demonstrated in these cases dilated ventricles and deepened subarachnoid spaces seventeen days after the onset of nervous manifestations, suggesting that atrophy of brain structures occurs early.

Mumps—It is difficult to estimate the incidence of cerebral complications in mumps, reports varying from 9.8 per cent in 1,750 cases (9) to none in 1,135 (9). Studies of the spinal fluid of fifty-six patients with

* This case is reported through the courtesy of Dr. James Reilly.

mumps (10) revealed pleocytosis in the majority. The incidence is said to be three times greater in males than in females.

Symptoms vary from mild and transient headache to evidences of a severe meningo-encephalitic reaction. These disturbances may appear not only before, during, or after glandular swelling but also without visible involvement of the salivary glands. In most instances the symptoms appear at the height of the parotitis and persist for from three to ten days; one patient has been reported who remained in coma twenty-one days. Examination usually reveals the classical signs of meningitis.

The course in the meningitic type is usually benign, while encephalitis entails a graver prognosis. There may be myelitis, radiculitis, cranial nerve paralysis and psychiatric disorders. The seventh and eighth cranial nerves are those most commonly affected and five per cent of the cases of deaf-mutism in this country are attributed to mumps. Deafness may occur in this disease without salivary gland swelling. The psychiatric disorders are rare and usually transient.

The spinal fluid findings are similar to those in measles encephalitis though the pleocytosis is usually greater and may persist for a month or two.

Treatment is the same as that for measles encephalitis. Wesselhoeft (11) says "failure to utilize spinal drainage at all, or insufficiently, in the fatal cases is worthy of note."

The prognosis is almost always good and complete recovery the rule. On this account there are few references to the pathology. Necropsy findings in twelve cases have been reported and there was evidence of meningitis in the majority. Slight intramedullary perivascular infiltration has also been found. Rivers (12) says there is no evidence that demyelinization, a salient feature of post-infection encephalitis, occurs in mumps meningo-encephalitis.

Case 2*—History. In December 1937, a six-year-old white boy who had been exposed to mumps two weeks previously was seen because of high fever, headache, and vomiting of one day's duration. There were no significant physical findings. The symptoms continued unabated; delirium and stiffness of the neck developed. There was marked cervical rigidity and a bilaterally positive Kernig's sign. The spinal fluid was clear and contained increased globulin and 320 cells, of which 96 per cent were lymphocytes. The clinical impression was mumps meningitis though there was no parotid swelling. Lumbar puncture was performed daily for several days with practically identical findings. The Mantoux and spinal fluid Wassermann tests were negative. Strippling of the erythrocytes was not present. Gradual improvement occurred and still there was no parotid swelling. The diagnosis was changed to lymphocytic choriomeningitis. Two weeks after the onset he was apparently well. At

* For this case I am indebted to Dr. S. F. Ravenel, Greensboro, N. C.

this time his mother developed mumps and we felt fairly sure of the diagnosis of mumps meningitis without parotid swelling. After recovery a mouse protection test with the patient's blood serum revealed no antibodies capable of neutralizing the virus of lymphocytic choriomeningitis. This patient was seen recently and apparently has completely recovered.

Comment—It is of interest that this boy had had previous cerebral difficulty. At seventeen months he was unable to stand, walk, or talk, was slightly spastic, and showed some left facial weakness. The diagnosis at that time was intracranial hemorrhage at birth. He had shown slow but progressive improvement.

Smallpox—In smallpox there may be direct invasion of the nervous system by pyogenic organisms causing meningitis or abscess or there may be a disseminated encephalomyelitis. The incidence of encephalitis is probably greater in epidemic than in sporadic cases and does not parallel the severity of the disease. Rolleston (13) reported twenty-five instances in 10,000 cases of smallpox. Usually, inability to enunciate distinctly and somnolence are first noted, coma supervenes rapidly and terminates fatally within a few hours. If patients survive the acute stage, recovery may be expected, although unconsciousness may last for weeks. In the spinal type, paralysis of the extremities is the chief sign and often persists for months.

Much more important are the rare cerebral complications following smallpox vaccination. By 1929, 93 cases had been reported in England, 124 in Holland, and a few elsewhere. In 1937, only twelve cases had been recognized in this country. Winnicott (14) feels that the cases tend to occur in groups or in certain areas at definite times and not uniformly distributed throughout all vaccinations. There is a suggestion of family predisposition in the occurrence of two cases in one family within two years.

The onset is acute and ordinarily on the eleventh day after vaccination, though it has been earlier or later. Malaise, headache, and vomiting are frequent initial symptoms, followed by drowsiness, unconsciousness, fever, and sometimes convulsions. There is fecal and urinary incontinenece or retention. The clinical picture is similar to that of measles encephalitis but is more acute, with more intense involvement of the spinal cord.

The prognosis is poor. The mortality was 50 per cent in England and 35 per cent in Holland. The majority of fatalities occurred within seven days of the onset. In non-fatal cases, the acute stage usually lasts one to two weeks, convalescence is rapid and usually complete. Of twenty-two patients who recovered in England, seventeen remained well, three showed slight mental changes, one has been subject to convulsions and one developed a hemiparesis. Ford (15) reported a girl who was

completely paralyzed in both legs and incontinent of urine for four months but who made a complete recovery in the next few years.

In the acute stage the spinal fluid usually contains forty to ninety cells and there may be increase in the protein content. Vaccine virus has been recovered from the spinal fluid in a few cases.

Very little may be said of treatment. The administration of serum from recently vaccinated persons has given favorable results in some cases.

An interesting and important finding is that the incidence of encephalitis following vaccination in England is 1:50,000 while in Holland it is 1:5,000. The explanation may be that in England 63 per cent of all vaccinations are in infants under one year of age, only 9.8 per cent of the encephalitis cases falling in this age group; while in Holland the majority of vaccinations are in children just under the school age with 79 per cent of the encephalitis is this age group. As a result, Rivers (16) and others have inferred that infants under one year of age are relatively insusceptible to postvaccinal encephalitis and that this constitutes a strong argument for vaccination within the first year of life. Encephalitis may occur after revaccination but is much more frequent after primary vaccination.

German Measles—Until recently very few cases of cerebral complications in German measles had been reported and in these complete recovery was the rule. During 1935, in St. Paul, there was a widespread epidemic, at first mild but later characterized by purpura and severe lymphadenitis. Briggs (17) reported five cases of meningo-encephalitis of which one died as a result of respiratory paralysis. Davison and Freidfeld (18) noted a marked increase in the incidence of encephalitis during the epidemic of 1935 and reported six cases, of which three were fatal. There is an increased susceptibility in the older age group.

The course of German measles furnishes no indication of what may follow. There may be an interval of one to six days between disappearance of the rash and appearance of nervous symptoms. The onset is sudden and occasionally apoplectiform. Owing to the scattered neural lesions, a multiplicity of signs and symptoms are encountered. The constitutional symptoms are not marked at the beginning but a rapid rise in temperature to 106 to 108 degrees F. may precede death.

Varicella—The incidence of encephalitis after chickenpox is low and complete recovery the rule. There are about seventy-five cases on record. The clinical picture is almost identical with that of measles encephalitis. The spinal fluid usually contains a slight excess of lymphocytes and an increased globulin content. Ford says "the diagnosis is based upon the development of the signs and symptoms described—within two weeks after an attack of varicella and upon elimination of other causes."

Influenza—Greenfield (19) has reported two cases in which paraplegia

came on suddenly after a febrile illness diagnosed as "influenza" and a few similar cases have been reported with no antecedent infection.

Pathology—The similarity in the pathology of encephalitis following measles, German measles, smallpox, influenza, and smallpox vaccination is so great that the most competent pathologists are unable to differentiate cases from the pathologic changes alone. Measles and post-vaccinal encephalitis have furnished most of the necropsies. Greenfield (20) describes three chief types of pathological change following measles: (1) congestion and hemorrhage, (2) perivascular infiltration, (3) perivascular demyelinization, the first and third being more constant.

Turnbull and McIntosh, (2) Perdrau, (21) Flexner, (22) and others describe almost identical changes in post-vaccinal encephalitis. Turnbull and McIntosh found in sections of the brachial plexus no evidence that the inflammation extended along nerves from the vaccinated areas to the spinal cord. Perdrau states that if the lesions of post-vaccinal encephalitis and of disseminated sclerosis are studied by the same histological methods, they will be found to be identical in type and distribution and to vary only in size and degree of severity. The late cicatricial process has not been observed in postvaccinal encephalitis.

Etiology—Because of similarities in the clinical and pathologic picture of encephalitis following such varied conditions as measles, influenza, German measles, smallpox, chickenpox, and smallpox vaccination, a common etiology has to be considered. One etiologic factor suggested for postvaccinal encephalitis is contamination of the lymph. This has received little consideration as there are many specimens of lymph from numerous sources. When post-vaccinal encephalitis first began to be recognized as a clinical entity it was thought that the neurological picture might be due to a secondary infection such as encephalitis lethargica or poliomyelitis. In the cases in England, however, the seasonal incidence did not correspond to that of either of these diseases. Later it became apparent that neither clinically nor pathologically could the new disease be identified with either of the others.

There are at present four main hypotheses as to the etiology of this group: (1) a local virus effect—that the disorder is due to direct action of the same virus which causes the original disease; (2) activation of a latent virus by the exanthem, vaccination etc.; (3) an anaphylactic reaction; (4) a toxic effect.

(1) Turnbull, McIntosh and a few others support the view that the encephalitis is due to direct action of the same virus which causes the original disease. They base their opinion on the fact that in several instances small amounts of vaccine virus have been demonstrated in the brains in fatal cases, and that intracerebral injections of vaccine virus induce in animals encephalitis similar to that observed in humans. McIntosh and Scarff (23) say that virulent strains of vaccinia produce in rabbits a definite meningo-encephalitis after intracerebral, intra-

venous, and intradermal inoculation and that the lesions are strictly comparable to those of post-vaccinal encephalitis, the causal agent of which they believe to be the vaccine virus. The occurrence of mumps meningitis without salivary gland swelling suggests a primary invasion of the meninges by the virus of mumps.

Most investigators contend that they have been unable to recover vaccine virus from the brain in fatal cases; that the amounts of virus found by Turnbull and McIntosh are not necessarily significant because Rivers and others have demonstrated the presence of vaccine virus in the blood, internal organs and brains of vaccinated animals not showing any evidence of encephalitis; and that intracerebral injections of vaccine virus in animals do not cause an encephalitis of the same nature as that seen following vaccination.

(2) The similarity between post-vaccinal and measles encephalitis substantiates, in Greenfield's (20) opinion, the theory that encephalitis following eruptive fevers is not directly due to the virus of the exanthem, but to another virus which is either activated or directed against the nervous system by the exanthem. He says: "A condition which occurs in so small a proportion of cases of measles and which in one year may suddenly appear with much greater frequency than in the previous twenty years, is unlikely to be due to a sudden change in the nature of so common a disease. It is much more likely to be due to some other concurrent epidemic which does not produce much obvious effect unless the carrier of the virus is attacked by smallpox or measles."

(3) The third hypothesis is that the encephalitis is the result of an anaphylactic reaction. Glantzman (24) has suspected that the first action of the virus is to sensitize nervous tissue, after which, at the height of antibody production, reaction occurs. Animal experimentation by Schwentker and Rivers (25) strengthens the hypothesis that the encephalomyelitis which follows antirabic vaccination is associated with the development of specific antibodies against brain. They (26) also showed that repeated intramuscular injections with emulsions and extracts of sterile normal rabbit brain produced myelin destruction in the brains of seven out of eight rhesus monkeys, eight control monkeys remaining well. Cultures from the involved brains were sterile and no transmissible agent was demonstrated by intracerebral inoculations into various animals.

(4) Ferraro, Armando, and Scheffer (27) suggest that acute disseminated encephalomyelitis is most likely a toxic reaction of the nervous system occurring in a number of different virus infections. They reported cases following measles, the lesions of which compared exactly with those seen in other exogenous toxic conditions such as lead poisoning.

Scarlet Fever.—The complications of scarlet fever are usually secondary to infection of the ears or sinuses. Meningitis is rare, enceph-

alitis rarer. In seven cases of hemiplegia following scarlet fever pathologic findings were hemorrhage, embolism, and thrombosis.

Diphtheria—According to Ford and Schaffer, (28) pathologic studies of the brain in twenty-one cases of hemiplegia following diphtheria have been reported. Findings included abscess, hemorrhage, pial edema, thrombosis, and embolism.

Whooping Cough—Cerebral complications are probably more common in whooping cough than the number of reported cases suggests. Toomey (29) saw four instances of cerebral hemorrhage and two of meningitis in 1,112 cases of pertussis.

Nervous symptoms may occur early or as late as three months after the onset but usually appear during the third or fourth week when paroxysms of coughing are most severe. This suggests that the seizures might be due to minute hemorrhages rather than to encephalitis. There may be an acute course or more rarely a slow development of symptoms with great rigidity and complete loss of speech. The child may be unconscious for months and die from secondary infection or consciousness may return in several weeks. This general rigidity usually leads to death or serious disability.

In 1924 Husler (30) stated that about 10 per cent of patients with whooping cough and convulsions had tetany. Powers (31) in 1925, reported five cases and held that infantile tetany was often the cause of convulsions in whooping cough. Three of his cases had severe rickets and two, mild rickets. He calls attention to the fact that the principal age incidence of pertussis complicated by convulsions is identical with that of infantile tetany and suggests that if calcium determinations cannot be made such cases should be treated for tetany.

The prognosis of convulsions in whooping cough is always grave; in one series reported (32) the mortality was 72 per cent. In the fourteen cases described by Eley, (33) eleven have permanent sequellae such as mental retardation, paralysis and recurrent convulsions.

Because of the high mortality there are many descriptions of the pathology. For years it was accepted that the convulsions were due to intra-cranial hemorrhage which was ascribed to the intense congestion of the brain produced by violent paroxysms of coughing. In 1927, Ford and Schaffer (29) said that in pertussis cerebral hemorrhage is present in almost all cases where there is a persistent hemiplegia. Ford thinks that when hemorrhage does occur it is more probable that injury to the cerebral vessels by bacterial toxins is responsible. In 1924 Husler and Spatz (34) described typical regressive changes in the nerve cells of the cortex and ascribed them to toxic degeneration of the neurons. Ford in 1929, (35) presented the case of a girl of twenty months, who developed convulsions and generalized rigidity five weeks after the onset of pertussis. The spinal fluid was normal. Death occurred from secondary infection after four months and in the meanwhile, rigidity persisted.

Autopsy showed diffuse symmetrical atrophy of the cerebral convolutions. No hemorrhages were found. The histologic picture was that of almost universal loss of nerve cells without relation to blood supply. Ford said the lesions could only have been produced by a toxic process or diffuse cortical inflammation which had receded, a theory which the majority of writers seem to accept.

Conclusion: (1) Cerebral complications in infectious diseases are rare and the incidence difficult to estimate. (2) Manifestations are many and varied, treatment symptomatic, and etiology, in most cases, obscure. The prognosis should always be guarded. (3) A careful history is important in the study of children with cerebral symptoms in order to rule out post-infection encephalitis. (4) A review of the literature suggests that vaccination against smallpox is much safer in early infancy because the incidence of post-vaccinal encephalitis is lower at this age.

References

1. Lucas: Quoted from Greenfield (20).
2. Turnbull, H. M., and McIntosh, J.: Br. J. of Exper. Path. 7:181 (Aug.) 1926.
3. Ford, Frank R.: Johns Hopkins Hosp. Bull. 43:140, 1928.
4. Neal, Josephine, and Appelbaum, E.: J.A.M.A., 88:1552, 1927.
5. Musser, J. H., and Hauser, G. H.: J.A.M.A., 88:1552, 1927.
6. Griffith: Quoted from Ford (3).
7. Elliott, C. C., and Elliott, A.: Br. Med. J. 2:734, 1933.
8. McCauslan and McClendon: Quoted from Eley (33).
9. Quoted from Eley (33).
10. Quoted from McKaig and Woltman (37).
11. Wesselhoeft, C.: M. Clin. N. Amer. 16:899, 1933.
12. Rivers, T. M.: Arch. Neurol, and Psychiat. 28:157, 1932.
13. Rolleston: Quoted from Eley (54).
14. Winnicott, D. W.: Br. J. of Childr. Dis., 23:107, 1926.
15. Ford, F. F.: Diseases of the Nervous System in Infancy, Child- and Adolescence.
16. Rivers, T. M.: J.A.M.A. 92:1147 (April 6) 1929.
17. Briggs, J. F.: J. Pediat. 7:609, 1935.
18. Davison, Charles, and Friedfeld, Louis: Am. J. Dis. Child. 55:496 (March) 1938.
19. Greenfield, J. G.: J. of Path. and Bact. 33:453, 1930.
20. Greenfield, J. G.: Brain 52:171-195 (July) 1929.
21. Perdrau, J. R.: J. of Path. 31:17, 1928.
22. Flexner, Simon: J.A.M.A. 94:305-311 (Feb. 1) 1930.
23. McIntosh, J., and Scarff, R. W.: J. of Path. and Bact. 33:483, 1930.
24. Glantzman: Quoted from Flexner (22).
25. Schwentker, F. F., and Rivers, T. M.: J. Exp. Med. 60:559, 1934.

26. Rivers, T. M., and Schwentker, F. F.: J. Exp. Med. 61:689-701, 1935.
27. Ferraro, Armando, and Scheffer: Arch. Neurol. and Psychiatr. 18:323-342 (Sept.) 1927.
28. Ford, F. R., and Schaffer, A. J.: Arch. Neurol. and Psychiatr. 18:323-342 (Sept.) 1927.
29. Toomey, J. A.: J. of Pediat. 5:322, 1934.
30. Husler: Quoted from Powers (31).
31. Powers, Grover F.: Am. J. Dis. Child. 30:632, (Nov.) 1925.
32. Quoted from Eley (33).
33. Eley, R. C.: J. of Pediat. 7:248, 1935.
34. Husler and Spatz: Quoted from Eley (33).
35. Ford, Frank R.: Am. J. Dis. Child. 37:1046 (May) 1929.
36. McKaig, C. B., and Woltman, H. W.: Arch. of Neurol. and Psychiatr. 31:794, 1934.
37. Gordon, M. H.: Lancet 1:652 (March 26) 1927.
38. Casparis, H. R.: Am. J. Dis. Child. 18:187, 1919.
39. Hurst, E. W., and Fairbrother, R. W.: J. Path and Bact. 33:463, 1930.
40. Grinker, Roy R., and Bassoe, Peter: Arch. Neurol. and Psychiatr. 25:723 (April) 1931.
41. McLendon, P. A.: Arch. of Ped. 43:544, 1926.
42. Miller, Milo; J.A.M.A. 97:161 (July 18) 1931.
43. Peterman, M. G., and Fox, M. J.: Am. J. Dis. Child. (Sept.) 1933.
44. Askin, J. A., and Zimmerman, H. M.: Am. J. Dis. Child. (July) 1929.
45. Crockford, A. L.: Br. M. J. 1:1171, 1932.
46. Skinner, H. O.: J.A.M.A. 105:24, (July 6) 1935.
47. Todesco, J.: Lancet 2:21, 1926.
48. Turnbull, H. M.: Br. M. J. 2:331, 1928.
49. McIntosh, H. M.: Br. M. J. 2:334, 198.
50. Troup, A. G., and Hurst, E. W.: Lancet 1:566, 1930.
51. Sears, W. G.: Brit. J. Child. Dis. 26:178, 1929.
52. Hiller, F., and Grinker, R. R.: Arch. Neurol. and Psychiatr. 23:634, 1930.
53. Rich, A. R.: Bull. Johns Hopkins Hosp. 51:346, 1932.
54. Eley, R. C.: J. of Pediat. 9:797 (Dec.) 1936.

Chairman Geddie: If I have been so ungallant as to suggest that this lady had plenty of time to write this paper, I would not be so ungentlemanly as to dispute her word. (Laughter.) However, from the way she has presented this difficult subject, I think that most any argument would have been worthwhile using.

The paper is open for discussion.

Dr. Wm. deB. MacNider (Chapel Hill): I wish very much that I had sufficient understanding of the subject to discuss this paper. I have listened to papers for about forty years, and I think this is a perfect paper, and I know it is by a perfect human being. (Applause).

Dr. Angus M. McBryde (Durham): Mr. Chairman and Members of the Section: I enjoyed very much Dr. McAlister's comprehensive and yet concise paper. I think everything Dr. MacNider said goes for me, too. It was a very concise presentation and very comprehensive. There is very little left to be said concerning this group of conditions. However, I would like to say one or two things about the pathology.

Encephalitis—I have one or two lantern slides I would like to show, but you wouldn't see very much of them in this light.

The lesion here is, of course, perivascular demyelinization, and one of its main characteristics is the fact that the lesions are very spotted, so that if we see a child at the onset of the measles-encephalitis, or after vaccinia, we have no idea of the prognosis until we have followed the child for a few days to see just what is going to happen. The prognosis is always guarded.

The lumbar lesions seem to have a better prognosis than those that hit the cerebrum. It is interesting to note that the cerebrum cortex is spared almost entirely, but there is a lesion in the midbrain, in the medulla. The picture of perivascular demyelinization is not very different from what you see in epidemic encephalitis, so that if you don't have the past history you would not see the difference. You have perivascular demyelinization mainly in the valves of the vessel, but in addition, you have marked destruction of the individual nerve cells rather than demyelinization and possibly later destruction of the axis-cylinder, and with distribution very similar there of the acute disseminative type.

Then there is another type which occurred in the group of diseases which Dr. Ward discussed today, with a different pathology, and that is the rickettsia disease, where you have a proliferation of the vascular epithelium and the perivascular infiltration, with the rickettsia bodies there, leading to thrombosis, and necrosis, some hemorrhage, which again, except for the history, you might not be able to tell clinically from the other types.

Another type which we see occurs after various hemorrhagic conditions, multiple hemorrhages throughout the brain. From the point of view of the physician who treats these conditions, probably the two most important are the postvaccinal and the type that occurs after Pasteur treatment. I expect the type that occurs after Pasteur treatment is more common than the post-vaccinal, although it is not stressed quite as much.

As far as etiology is concerned, the main thing—because of various causations of this disease—is the fact that the pathological lesion is the type that it is. Postpallium demyelinization does not occur. It is an

entirely different picture when you have virus infection of the brain. I think more and more people are feeling that the causation here is allergy, some type of sensitivity, which has been suggested especially in those people who have had encephalitis following Pasteur treatment—that you can almost always find a history of allergy there. We find that they are sensitive to either the rabbit's tick or perhaps the virus. They have a marked sensitivity and reaction to this same type of rickettsia.

There has been some work done to show that it is an allergic condition. We might draw two lessons from all of these conditions: One, to vaccinate all children, if possible, under one year of age because we don't seem to get this encephalitic reaction then, and second, to desensitize them with a 1 to 10 mixture before you start their treatment if they show a positive skin test. (Applause.)

Dr. C. A. Street (Winston-Salem): I don't know how common postvaccinal encephalitis is. I hear from Dr. McAlister that it is not very common. The other types of encephalitis, I am sure, are more common. I have seen more of them.

However, I have seen two cases of postvaccinal encephalitis. I saw one a year ago and I saw one yesterday. Both cases were in boys between five and six years old. Both started on the eleventh day following vaccination. Both boys were extremely ill. The first boy, whom I saw a year ago, had apparently more involvement of his upper nervous system. He was completely incoördinated, and I thought he was going to die. However, I gathered from the literature I had seen—although no one here seems to believe in it very much—that if the patient were given blood from someone who had been vaccinated recently it would be good treatment.

I gave the first boy about 35 c.c. of blood from a boy who had been vaccinated one year previously.

The child I saw yesterday had symptoms much more like meningitis. However, he only had seventy cells mononuclear, practically all in the spinal fluid. This child had been extremely sick for about thirty-six hours, high fever. The family doctor was going to give him blood.

So far, those are the only two cases I have seen of encephalitis following smallpox vaccination.

Dr. John LaBruce Ward (Asheville): Mr. Chairman, I think from a public health standpoint there is just one thing Dr. McAllister brought out in the paper which is of great interest, and that is the encephalitis following vaccination. Personally, I have had only one case, a child seven years of age. Unfortunately, however, in North Carolina we have a law which says that every child must be vaccinated before entering school, and from that the parents conclude it is not necessary to vaccinate the child before that time.

That law should be changed, and we should have a law requiring infants to be vaccinated before one year of age. It will be just as easy to pass as the other law and will be easy to enforce. When a birth certificate is sent out, the parents are notified that the child must be vaccinated before one year of age.

If you gentlemen will get busy when you get back home, maybe we will be able to put that across.

We have had two cases of so-called mumps-meningitis. One of them was a boy of ten, who had been exposed to it in school. There was an epidemic in the school. He had a very stormy time of it and finally recovered.

The other was an infant only eight months of age, whose two brothers had the disease, and whose mother had very severe mastitis without any parotiditis. This child also recovered.

Chairman Geddie: Is there any further discussion of Dr. McAlister's most interesting and comprehensive paper? If not, I will ask Dr. McAlister to close.

Dr. McAllister: I agree with Dr. McBryde that the most interesting thing about this subject is the etiology, and I think that it is most interesting to read about, but we don't seem to know exactly what is the etiology, though I believe experimental work does tend to show that is an allergic type of thing.

I think that Dr. Street's report of two cases in North Carolina which probably have not been included in the literature suggests that all of the cases have not been reported and my twelve instances which have been reported probably are not all-inclusive.

Perhaps to suggest that this is a year for this type of complication, we saw a boy in Greensboro, an encephalitis, and we thought that this was due to chickenpox, which he had had one month previously. This case was a little complicated, and that is the reason I did not go into it today.

We also had a case of whooping cough, complicated by convulsions, within the last month.

Chairman Geddie: The next paper, "Certain Responsibilities of the Pediatrician Toward the Production of a Happy Adult," will be presented by Dr. Jasper Stewart Hunt of Charlotte.

Dr. Hunt presented his prepared paper. (Applause.)

CERTAIN RESPONSIBILITIES OF THE PEDIATRICIAN TOWARDS THE PRODUCTION OF A HAPPY ADULT

Jasper Stewart Hunt, M.D.
Charlotte, N. C.

This subject is chosen in the full sense and acknowledgment that it smacks of beating the tom-toms before the Ladies' Auxiliary or of someone desiring to make a pretty little talk before a group of pseudo human benefactors. This statement should make one pause and seriously lend thought to the fact that such has in the past been true. Teaching one through infancy and childhood to assume emotional security has in the past been delegated to the practical nurse, the maid, or the policeman, a group not knowing or caring that the effect of good or bad influences begin at birth (1). One assumes emotional security when the demands and conditions of everyday life are met without undue conflict. By obtaining emotional security one is happy. If not emotionally secure, he is most assuredly unhappy. The psychologist and the psychiatrist gain access to the individual only in the event he breaks down under the strain of constant clashes with his environment, whereas the pediatrician contacts a potentially insecure individual at birth. His is the first medical contact with the newly born and his are the words which first sow the seeds of understanding between the mother and her child. The action in child psychology as in medicine generally has turned from treatment to prevention, and it follows that the pediatrician should be the main factor in the field of prevention and treatment of behavior problems in childhood (2). It is often difficult for one to be led away from the idea that child management presupposes one being a psychiatrist, and for that reason it is emphatically emphasized that the speaker does not in any manner propose to be a psychiatrist, nor does he aspire to tell you how to properly adjust a young human being in such manner as to assure eventual happiness any more than one of you would assume to address this group on any physical medical subject, expecting to give the last word. It is not to be presumed that this paper has the effrontery to suggest the answer necessary to the complete act of understanding between parent and child nor to give the formula for eventual adult happiness, just as any of you continue helpless to assure that pneumonia can be prevented by some trick management of coryza. One would be foolish, however, to suggest that pneumonia is not more frequently warded off by the proper management of an acute upper respiratory infection. As a coryza may end in pneumonia, so may the unhappy and insecure child end in insanity. It, therefore, follows that the management of childhood problems and an attempt at attainment of understanding on the part of parent and child is essential to the eventual happiness of child, father, and mother. This is mental health. Again mental health may be regarded as the

expression of the individual's adjustment to life in terms of emotional satisfaction in the light of his capacities, needs, demands, and opportunities. These depend on the qualities of the individual's inherited equipment or constitutional endowment, the environmental situation and life experiences affecting him, and how he adjusted and reacted to them from birth onward. The chief concern of the physician is in shaping the environmental stimuli so that reasonable success and satisfaction with others will be the lot of every person (3).

A human adult reaches his maturity through two general methods of development. One develops in bodily stature through physical growth and through experience and reactions to the production of psychologic growth. The chief excuse for the existence of our specialty lies in these principles of growth and development. Yet the American Board of Pediatrics states that it is important to call attention to the failure of many candidates in that part of the examination which has to do with growth and development of the child (4). The time is past when one is an adequate pediatrician who can calculate through a maze of figures and percentages to the production of a formula suitable to a weazoned baby, and who can peer knowingly through a magnifying lens into an ear and there find the cause of fever and shrieks of pain in an infant at 3 o'clock in the morning. The general practitioner who graduates from the better medical schools can do these things as well as the pediatrician. The general practitioner is increasingly well-trained in the rudiments of pediatrics. He can manage measles, pertussis or an unruly grandmother as well as any of us. It would seem, therefore, that pediatricians would be wise to recognize that one's specialized attention should be directed more in the future to psychologic growth and development than it has in the past.

A perusal of the following statistics will reveal the fact that infant mortality rates have been greatly reduced in the past 157 years, the greatest reduction being in the past 40 years.

Year	Location	Mortality rate per 1,000 live births in first year of life
1781	England and Wales	280
1890	U. S. Registration Area	205
1890	Raleigh	215
1932	North Carolina	66.5

Thus physical pediatrics has made great strides.

When, however, one turns one's thoughts to the psychologic phase of growth and development, one envisions an entirely different picture. In the world about us there is suspicion, greed and distrust, and general unrest to an extent sufficient to cause an upheaval even in the fundamental principles of government. This unrest is not only limited to governments and nations. Its existence is noted in the family through the separation of the functions of the family from the family; that is,

cooking, sewing, and caring for the aged, etc., is not any longer considered a family problem but is delegated to some specialized group of hirelings. It is shown in the decrease in time spent in the mechanics of living since bridge, garden clubs, etc., occupy one's time and psychologically makes the family ask, "Why things are happening?" instead of "What is happening?" This condition is more prevalent in the United States than in Europe. Unrest in the family is readily noticed through changes in the basis of authority. This change in authority begins in about the sixth, seventh, or eighth year of age." "Johnny says things to us that we would not have dared say when we were children," one is told by many mothers. The child is often no longer given authority on which to rest or follow. Again unrest is noted through integration. Integration means separation of self from nature, as in the case of a ten-year-old girl who is horrified to learn that milk does not come from a tin can, it comes from a cow. The unhappy girl then refuses to drink anything that comes from such a terrible looking animal. Over-integration to the child means that everything comes from nowhere and goes into nowhere. So why should the child feel responsible for anything. In former days the child could have its fun at home but now he goes to the movies for his fun, with the theme of the movie being determined by Hollywood minds. Thus the child's various fibers are being literally teased apart by groups having no concept of the neighborhood spirit.

Likewise unrest is found in the individual. Society decrees that the individual unable to live at harmony and in peace with society shall be plucked from that society and forceably restrained through the medium of asylums, reformatories, or other places of detention. The Ohio State Reformatory increased its population from 1920 to 1932 90.6 per cent while the population of the state increased only 15 per cent. From 1927 to 1932 out of a total of 9,562 prisoners, 51 per cent were from 16-20 years of age, an age group just graduated from pediatrics (5).

It is, therefore, shown that the physical component of growth and development has for the past two centuries been vastly improved through the lowering of mortality rates. Whereas, in the past 15 years social unrest with insecurity, fear, and unhappiness has filled our asylums, reformatories, and jails. Those so incarcerated are but a small unit in comparison to the total who are undergoing unrest, but insufficient to warrant their removal from society. The need for more concentrated, worthy work on the part of the pediatrician is apparent. This work is considered by some of our outstanding groups as being the future of the trained pediatric specialist. The first behavior clinic to be established in the United States under a department of pediatrics was at Johns Hopkins University only six years ago. The head of that department states, "The pediatrician holds a strategic position. He is the first trained observer to enter the child's life, the first to detect mistakes in

upbringing and education and to perceive unhealthy attitudes and habits. The pediatrician is the pilot of the formative years, or, better, he is the last perfect example of the family physician, turned to in every trouble, now relying on his medical wisdom, now appearing in the triple part of guide, philosopher, and friend"(6).

Happiness is probably the goal we all try to attain. Let us consider three methods through which the child may be trained toward adult happiness. The first is affection. This may be passed over since few pediatricians are confronted by the problem of too little affection on the part of parents for their children. The second is freedom to grow. This is exemplified in the child whose growth toward happiness is retarded by being given a bottle past the first year or by being carried when it should be walking. The third and most important method is conferring on the child a sense of security, the knowledge that a firm foundation underlies his life. Security is found in the household where angry voices are not heard, where calmness prevails and honesty is always insisted upon. This is the most important single point in conferring happiness to the future grown-up and the remainder of these remarks will center around the effect of insecurity on the child. Insecurity is the result when one's primary instinct of self-preservation is undermined and unhappiness results in varying degree proportionate to the degree of insecurity experienced by the individual. Following insecurity comes fear; then resentment; next a clash of ideas, and, finally, a crash which may take the form of emotional disintegration or may go to acts of dominance or violence, as exemplified by the youngster in Chicago in 1934 who killed his grandmother with a lead pipe because of her nagging and lack of understanding of the boy. In this sequence of events, let your attention be directed to fear. Fear is a primary instinct manifested at birth, being aroused if the infant's balance be upset or if a sudden loud noise is made. All other fears are built in, the results of experience. Some fears are good, and result in proper habits and help condition one for life; for example, one does not park 40 minutes in a 30 minute parking zone because experience has taught him that a man with a blue coat will give him a ticket for which five dollars will have to be paid. Thus one does not park over time because he is scared. On the other hand fears may so completely dominate a child as to make it difficult or impossible for him to properly adjust himself to his environment. These built in fears are of two general types (7). They are objective; that is to say, i.e., fear of the dark, feathers, snakes, deep holes, doctors, etc.; and secondly, fears are based on apprehension and dread; for example, fear of death, loss of a parent, fear of hell, etc. These two types of fear are among the greatest handicaps to happiness. In their correction one does not need a vocabulary of high-sounding names. One's greatest armament is a sympathetic understanding of the child through logic and time in dealing with

the situation, through having unending patience, through having faith in the child's ability to correct his own ills, and, lastly, through seeing the problem through the child's own eyes (8). This does not mean to solve the problem as the child has solved it; it means to understand him. You cannot change the child's course of action unless you know why that course was taken.

On February 17, 1938, a physically perfect, Jewish female, four years of age was brought to my office with a complaint of bedwetting of three days duration for which no cause could be ascribed. The child was talked to alone and under quizzing she stated, "I have been dreaming about something, a bad man looks up at me when I wake up at night and scares me. He looks like Mr. Gung Hang Ho." The mother has since told me that this is her language for Old King Cole. The underlying factor in her enuresis was fear. She was scared of her dreams and was instructed that she was a smart girl, that the dreams meant nothing and that she could stop wetting the bed that night if she cared to do so. A telephone call one week later revealed only one wet bed since this instruction, and when the child was asked why she quit wetting the bed, she very proudly looked up and said, "I quit because I wanted to."

A second case illustrating objective fear resulting in insecurity is exemplified by a white male 9 years of age, who came to my office March 25, 1937, complaining of fever and nervousness of one year's duration. Irrelevant statements in the recorded history will be omitted to conserve time. The boy is failing in school in writng. He is a very nervous, furtive, but highly intelligent white male. Questioning reveals a number of frights, particularly of feathers and of staying alone. He is constantly in motion, with facial grimaces and has difficulty in speech which seems to be more of a stammer than of inability to pronounce. His body motions are controllable. He states that one of his greatest fears is caused by the boys at school who chase him about the campus with feathers in their hands. Other fears are present but for my purpose this is the only one I wish to demonstrate. He was hospitalized at the Mercy Hospital in Charlotte and the first night a feather was placed several feet away from him with the explanation that the feather would in no manner bother him and to turn over and go to sleep. The child was kept under observation for about two weeks in the hospital after which he was discharged definitely improved. On May 20, 1937, two months from the time he was first seen, the mother states the following: "Bobby is like another human being. I have never seen such a change. The fear of feathers has been definitely overcome. He goes to bed by himself and has no further night terrors. He is still on luminol and each afternoon gets 1½ hours of sleep. His difficulty in starting sentences has ceased, and he is interested in fishing and outdoor

things in general." The boy states: "I think I'm getting better fast. I was so nervous and stuff like that. Moving pictures and the radio scared me, especially when somebody got shot. I was afraid of chicken feathers, but am not any more, but boy, oh, boy, am I afraid of a setting hen! I haven't had a dream since I've been gone from Mercy Hospital. I don't like going to bed in the afternoon nor at 7 at night. I used to not fight, but I'm not afraid of nobody now."

To illustrate fears of the apprehension and dread type, a white female 7 years of age came to my office December 29, 1937, with a story of having had considerable emotional difficulty for the past several years. She won't mix or make friends. For the past six months she has been unable to be crossed, flying into a rage over the least thing. She has had frequent vomiting spells for the last six months, which spells usually occur before breakfast. Always complaining of her stomach hurting, and has rather frequent headaches, dizzy spells, and complains of a pain in the eyes. Patient is a fairly well-developed, malnourished white female, who is literally frightened to death, holding her head and hands, and sobbing about her fear of doctors, and her fear of her mother dying. After about five minutes of such crying and moaning, patient suddenly looked up at me and shrieked, "I'm going to get a knife and cut your throat." When she was told that there was a knife in the desk drawer to which she could help herself, and that I would begin to unbutton my collar to have my throat cut, the child was completely astonished, broke out in a smile, and was fairly easily managed the rest of the examination. Under questioning she gave the following statements: "I want to hear my mother's voice one more time. Can't I see my poor daddy just one more time. I am scared to death. I never have been alone with a man before in my life. Mother, speak to me once more. She has gone away just like Daddy. I ain't got no mother. Can't I ever see Mother again. Go ahead and get it over with. How can I help myself, I'm so scared."

This child had suffered the loss of her father to whom she was devoted in the last year. Her mother is a very exacting individual of a high-strung type who has absolutely no understanding of the child's problems. The child was given a sedative and hospitalized at the Mercy Hospital. When she awakened she cried loudly, threatened murder, and was very unkind to the nurses. That night she ran out in the hall and jumped on the back of a lady who was visiting a sick friend and screened at her, "I'm going to cut your throat!" When I saw the child that night she stated, "I miss my dead daddy so much, and I'm afraid Mother is going to die too. Why won't Mother never come in here?" The next night she said, "I want to talk to Mother and tell her how nice they have been. They are so good, I don't know which one I like best (referring to the nurses). I am happier over here than I have ever been in

my life." This child was given mental suggestion as to the emptiness of her fears. The nurses were instructed to work her on the hall. She was given hydrotherapy treatments and ultra-violet lamp irradiations.

On January 10, 1938, she was seen in my office, and had gained two pounds during the week's stay in the hospital. She states, "I am happier since you told me that it was best to get along with people, and that I would have to study hard to find out how to be happy. I hated to leave the hospital because everyone was so good to me. I am not afraid now of those things because I know they are not true." (Here she refers to the death of her mother.) This child progressed very nicely for about three weeks, but at the present time is having further episodes of outbursts of temper and threats of death and destruction of all who cross her path. This is obviously a child who should be completely removed from her home environment, a factor impossible to accomplish, and a girl whose outlook to eventual adult happiness is very cloudy.

There are other illustrations that could be given. I only mention these cases to illustrate the undermining effect of the two types of fears previously discussed.

In conclusion and in retrospect this discussion has centered largely on the child. However, let it be emphasized that the child who has a normal inherited potential for growth and development is not unhappy nor does he become a behavior problem until he is made so. He is made so by his environment. The chief factor in this environment is the parent, and, as Watson points out, instead of having only one parent to contend with, unfortunately there are two! The job of being a parent has in recent years become beset with many perplexities. Controversies about ideal weight charts, B.M.R., I.Q., and so-called repression have been seized upon by press and radio to haunt mothers with pseudo-terms and agitations presented to a defenselss public as the last word in science. Many women nowadays come to matrimony and motherhood from the ranks of teachers, nurses, stenographers, salesgirls, and factory workers, often with a marked tendency to thrust upon their offspring all the energy released by the abandonment of their jobs. The general unrest and insecurity of the age, a greater frequency of parental separations after hasty trials, living with in-laws after marriage, all these factors may profoundly effect, from the beginning, the environmental influences upon an infant.

Uninformed, misinformed, worried, scared, harassed parents, especially mothers, now more than ever before, are turning to their physicians for information, certainty and guidance (9). If this guidance and information is not properly given by the pediatrician to the parent, no amount of correction directed to the child alone will prove of permanent benefit. If a child who lives in a malarial district, and who is infested with malaria, be removed to a non-malarial district and is given quinine, he will soon cease to be so infested. If, however, he is returned to his

former habitat, infestation will more than likely recur. If the problem child be removed from his environment, institutionalized and mentally purged of his unhappiness and emotional difficulties, he will probably become normal. However, upon his return to his home and his previously described misinformed parents, he will assuredly revert to his former difficulties. Let it, therefore, be emphasized that the child per se is not at fault. He is the victim of faulty parents, and it is towards the parents that the pediatrician must direct the major portion of his energies in such manner as to educate the parents along the lines that have heretofore been suggested. When they become so educated, and not until that time, will the child cease to be the problem he now increasingly presents, the reformatories will have done with expansion, and the world will be perhaps a little better place in which to live.

Bibliography

1. Kinsman, R. P.: Mental Hygiene and Its Relation to Infants and Children, Canad. M.A.J. 35: 540-542, 1936.

2. Wolff, Ernest: Trends in Child Psychiatry, J. Pediat. 10:90-97, 1937.

3. Patry, F. L.: Integrating Mental Hygiene, Am. J. Pub. Health 26: 471-479, 1936.

4. Report of the Am. Board of Pediat., Am. J. Diseases of Children 51: 389-395, 1936.

5. Caldwell, M. G.: Is the Reformatory Reforming the Prisoner? J. Juvenile Research 18: 90-102, 1934.

6. Park, E. A.: A Child Psychiatric Clinic in a Pediatric Department, Canad. M.A.J. 38: 74-78, 1938.

7. Richards, Esther: Behavior Aspects of Child Conduct. Macmillan 1936.

8. Fraud, Anna, quoted by Plant, James: Practice of Psychiatry in a Community Clinic, J. Pediat. 9: 555-558, 1936.

9. Kanner, Leo: Mental Hygiene During the First Two Years of Life, Preventive Medicine 7: 233-237, 1938.

Charles Geddie: Dr. Hunt's paper is now open for discussion.

Dr. Charles R. Bugg (Raleigh): I want to compliment Dr. Hunt on his very excellent paper. It is a difficult subject which I think was beautifully presented. I also think that it is a very timely subject. If we are to fulfill our functions as pediatricians, we must become more than mechanics.

I was tremendously impressed with the quotation in his paper, which I think deserves re-reading. "The pediatrician is the pilot of the formative years, or, better, he is the last perfect example of the family physician, turned to in every trouble, now relying on his medical

wisdom, now appearing in the triple part of guide, philosopher and friend."

I think that is a very important statement and well made. I think it is true. I think, also, that it compensates us, possibly, to some extent for the lack of pecuniary compensation that we get in our line of work.

Nowadays children are growing up under different circumstances from those under which we ourselves grew up. Their environment is changing, things are moving faster. Problems arise that did not have to be solved in the days of a more relaxed form of living. We are bound to help the parents in solving these problems.

I am impressed with a good many things as I talk to mothers. One of them is almost complete lack of any fundamental ideas of discipline. The average mother thinks that discipline is a shower of "don'ts" and she continually nags at the child thinking that she is being strict.

I would like to tell them my own ideas about discipline—two fundatental conceptions. I find it does not do to tell them too many things. First is consistency. Don't threaten to do things and not do them. Don't be constantly holding something over the child that he knows you are not going to do. Don't say a certain thing that you are not going to let him get away with, and then sometimes let him get away with it and sometimes not.

The constant "don'ts" constitute just about all that the average mother seems to know about discipline.

Another thing that I feel very strongly about is the so-called behaviorism, or the peculiar idea conceived by somebody that the child must be allowed to develop his or her own personality. It seems to me that there is one thing that a child must learn as a child, and that is that life consists of doing a lot of things that you don't like to do when you first start, and that you simply have to learn to keep on doing them until you get to like them. I think there is nothing that makes for greater adult security than the training of the child to the realization that there are rules under which he must live just as there are rules to a game, that liberty does not consist of doing exactly what you want to do but that liberty consists of realizing what things you can do that are consistent with a normal life with your fellow men.

I am also interested in his reference to prolonged infancy. I think that we, specifically, are responsible for correcting what we may possibly have been somewhat responsible for, particularly in connection with diet, and therefore they carry it over into everything else—the idea of standardizing things after a baby gets out of infancy. If a mother takes the attitude toward a two-year old child that she took toward the six-months old child, the baby is going to take that same attitude towards life.

So we must make them realize that as the babies reach the age of

eighteen months, two years, and two and a half years, they are developing into a distinct personality which is more a child's reaction than an infant's reaction, because a child can perfectly easily carry infantile reactions even into adult life.

I like very much the expression which I think is very clever and expressive, and which Dr. Richards is so fond of using in referring to a group of children with whom she came in contact—"embryo praecoxes." She calls by that name the child who centers his only interest in life in being absolutely perfect. He must lead his class. He must make each paper he hands in perfect. He spends a half hour drawing a margin on his sheet in order to get it absolutely perfect, and agonizes over it if he doesn't.

She calls such a child an embryo praecox. She says the first evidence of improvement is a falling off in marks in deportment. As soon as the child gets down in the "B" class, she feels she is getting somewhere. When she can get him into the "C" class she feels she is getting him fairly well secured.

I know of no one who has a more practical conception of child psychology than she has. She goes so far as to say that you cannot only direct the child who has behavior problems in such a way that he will become a happier adult, but that even where his psychological difficulty is a schizophrenic type, if it is early recognized, a great deal can be done in a preventive way.

I certainly enjoyed Dr. Hunt's paper very much. I think it was timely. I think the choice of subject was fine, and I hope that we are going to have other papers along the same line. (Applause.)

Dr. Foster (Raleigh): I am not a pediatrician, but a state hospital man. I want to compliment Dr. Hunt on his very excellent paper. I am especially impressed with certain phases of it and with certain of Dr. Bugg's comments regarding the paper, particularly those phases regarding the continuation of infancy into adult life.

In our State Hospital, we are seeing a large increase in patients of that type, of the psychoneuresthenic type, who can definitely be benefited if they are taken early enough to prevent the onset of difficulties, the difficulties of alcoholism and drug addiction, which are all expressions of psychoneurosis and of conditions which indicate personalities who are continuing their infancy. Their behavior is of an infantile type.

Today, when the laymen are trying to do so much in the way of mental hygiene and to take away certain functions of this physician which really belong to us because you can't separate the mental life of people from their physical life, I think the doctors, the pediatricians, have a special opportunity and they should make the most of it.

I again want to compliment Dr. Hunt on his paper. I think it was very timely, and we should really pay a great deal of attention to that sort of thing. (Applause).

Dr. Angus M. McBryde (Durham): There is really nothing to add to Dr. Hunt's paper and the discussion which has taken place.

However, I would like to say, since we are speaking of the pediatrician, if you figure in terms of actual babies, the pediatricians of North Carolina see less than ten per cent of them. I think we ought to say the general practitioner and the pediatrician. The general practitioner sees most of the babies, and he is the man who is likely to be caught in heavy practice so that he doesn't have time to think about the question of guiding the child.

Another point which I think ought to be stressed is the fact that the time for child guidance begins at birth. That first month of life, especially the first two weeks after the mother comes home from the hospital, when she is calling you two or three times a day, is the time when the mother is going to be able to achieve a peace of mind concerning that infant which she won't be able to get at any other time. Her attitude towards the child begins then. It is in that first early period when we have to start the mother on a proper emotional attitude towards her child. If we wait much longer, then she will already be started off on the wrong track, unless she is an intelligent individual. While some behavior problems exist in intelligent individuals, a great number of them exist in individuals who haven't the insight into the situation—and whom Dr. Crispell and I see a great number of together. The mother does not have the insight and it is almost impossible to give her insight.

However, it is the general practitioner who delivers the baby and he should see that something is done about it: It is his responsibility and not the pediatricians, because the behavior pattern is set before the pediatrician sees the child in many instances.

Dr. Lewis W. Elias (Asheville): Just this one point: I was talking to Dr. Strecker after his address this morning about functional illness in children. Where we usually think of a child in the hospital after an illness as getting physically well, as a child who is now recovered, he says that practically all children who have been ill are functionally ill even though they recover physically, and that most of them have to be made over again or they bear the brunt of that or the damage of it through life.

Dr. D. E. Robinson (Burlington): I enjoyed Dr. Hunt's paper a great deal. There is just one point he passed over. He took for granted the affection of parents for their children. I think that is quite true, that practically all the parents we come in contact with love their children a great deal and most of the children love them.

Dr. Plant in Baltimore, about a year and a half ago, made a point which I thought was a rather nice one, and that is to get the parents to try to distinguished between true affection and love, and dependence which the child has on his parents. That brings up the whole subject of bribes,

presents, and things of that sort which are used by parents to obtain what they call discipline. I think if we can start out when the parents are young and the children are infants, and get the idea across to the parents that their children love them, or rather, should love them, independently of what they get out of them physically, we will establish a truer security and confidence, and the advice of the parents will be worth a whole lot more than if the child merely associates his parents with the bribes and the presents that he gets from them.

Dr. G. E. Bell (Wilson): I don't know when I enjoyed a paper more than I did Dr. Hunt's. I do both obstetrics and pediatrics.

About the first question I am asked after I deliver a woman is, "When can I go home?" The next queston is, "How soon can I put the baby on a bottle?" Next, "Do you know of a good practical nurse? I think I have one in mind that I can get after the first month, but I want a good practical nurse."

The whole idea is that just as soon as the baby is born she wants to get it off her hands, she wants to give the responsibility to somebody else. It seems to me that the pediatrician or the obstetrician, or both, could do a lot of good by giving the new mother a little of his time and telling her what is to be expected of her with her baby.

We often refer to the Northerners letting their children go to school with the colored children, mixing them. The Northerners say, "You don't do that. You turn them right over to the niggers and let them raise them just as soon as they are born."

Dr. A. B. Choate (Charlotte): I am neither a pediatrician nor a psychiatrist, but I do want to stress Dr. Hunt's paper because if more pediatricians had this viewpoint, those of us in adult practice would not see so many patients who come in with emotional breakdowns. To be perfectly frank, lots of times they come in and we don't recognize them.

I was thinking the other day of a case that came into my office, a girl about thirty-two years of age, who said she had heart trouble. She said she was subject to dizzy spells and had not been able to sleep for quite some time. We assured her she did not have heart trouble. She came back several days later and said she had appendicitis. After a while she was assured she did not have appendicitis. Then she thought she had nose trouble. Someone examined her nose and she was assured she was all right.

We went into her history and found that she had been teaching in the city schools with a creditable record for about eight years. She had graduated with honors at the head of her class, and just within the past month she had received a letter from the school stating that she was considered their most outstanding student there and was offered the position of assistant dean. We could see she was very bright mentally. Her physical condition was very good.

We went back farther, into her home life, and found her father was a preacher, now retired. Even when she was in high school he would switch her and would promise her that he would do even more if she were to tell her mother about it. There was constant strife between father and mother. There was no affection shown by either one, apparently. There was no security there.

If this girl had had security in her home, then she would have had a good foundation all the way around, because, as I pointed out, her physical condition was good, her mental condition was good, but her emotional stability was very poor. She was unsound emotionally due to the fact that she was not secure in her home. There was no affection there.

So that if the pediatricians can bring about a better education of the parents in the home, they can make it much easier for people when they grow up and thus cut down lots of their emotional breakdowns.

Chairman Geddie: Is there any further discussion? Dr. Hunt, will you close?

Dr. Hunt: I have nothing to say.

Chairman Geddie: The next speaker is Dr. Raymond S. Crispell, Professor of Psychiatry at the University, whose subject is, "Neuro-Psychiatric Problems Associated in Cerebral Birth Injuries."

Dr. Crispell presented his prepared paper. (Applause.)

NEUROPSYCHIATRIC PROBLEMS ASSOCIATED WITH CEREBRAL BIRTH INJURIES

Raymond S. Crispell, M.D.
Durham, N. C.

The Confusion and Inherent Difficulties of the Subject

The subject of cerebral birth injuries is an interesting and important one that has received a great deal of medical attention. But it presents complicated problems that have not been entirely worked out. In this communication we are adding to the confusion by including something about certain neurologic and psychiatric (neuropsychiatric) conditions which are obscure in themselves and in their relationship with cerebral birth injuries. Perhaps we shall be able to do more than to raise certain points and questions and issues. Certainly we shall not be able to speak with any completeness and finality.

Incidentally, we must briefly mention in passing something about the frequency of cerebral birth injuries and their differentiation from other congenital conditions of the brain—and something should be known about the early lesions and the early clinical manifestations before we can understand the late lesions and the late clinical manifestations with which neuropsychiatry and this paper are predominantly concerned.

In dealing with an individual compromised somatically or psychically or somatopsychically, it must be established as to whether or not the condition is congenital. This is not always easy—not even for the pediatrician. And it is still more difficult for the neuropsychiatrist whose patients are predominantly beyond the age of childhood.

Further, it is scientific and profitable to try to determine as to whether the congenital condition is due to some hereditary (pre-germinal) factors or to some deleterious influences on the germ-plasm (germinal factors) or to some intra-uterine developmental trouble, embryonic or fetal. All of these factors are pre-natal and are very much confused with a group of factors at birth, intra-natal factors, as we shall speak of them hereafter. It must not be forgotten that the latter are from birth and, therefore, congenital, and also that several different factors may play a part in the congenital compromise of the individual.

Congenital conditions may be, and often are, latent at birth and do not become manifest until later, sometimes years later. Properly speaking, in the case of hereditary or developmental conditions acting this way it is an abiotrophy; in the case of birth or intra-natal conditions, a late residual or sequel.

Congenital conditions, pre-natal and intra-natal must be differentiated from post-natal, or conditions arising after birth, the infections, intoxications, injuries, etc., concerning which medicine hitherto has tended to concentrate its attention since such difficulties are most easily established and understood. There are indications that many neuropsychiatric conditions, neurologic and psychiatric, are due wholly, or in part, to congenital conditions, pre-natal and intra-natal.

Although the subject is still too obscure, we are beginning to know something about *hereditary factors,* and the future promises further clarification. This subject can be, and in all probability will be, applied in eugenics and race hygiene. There is at present an increasing interest in this subject. Hitherto it has been more or less neglected by medicine.

Concerning the *germinal factors* or the deleterious influences on the germ plasm before fertilization, our present knowledge — or rather ignorance — prevents us from saying much. A neuropsychiatric condition caused by a factor operative in the germinal life period may be properly said to be inborn but not hereditary. Rosanoff believes that an outstanding example of such a condition is that of mongolism, a special form of mental deficiency. Undoubtedly there are deleterious influences by intoxications, infections, disturbances in metabolism, etc., which affect the germ plasm itself but concerning which science at present knows little or nothing.

Dealing with the *intra-uterine developmental disorders,* embryonic and fetal, we are on more scientifically established ground. But there is a great confusion in distinguishing these disorders from hereditary ones or

from those arising from some accidents at birth. The attempts to distinguish and differentiate these conditions are not purely academic although it often seems so in the practical handling of them in the individual case concerned. We can never apply our genetics without this differentiation. As physicians, we can never give a eugenic prognosis as we are increasingly called upon to do. Needless mental suffering and anguish on the past of patients and their families are caused by confusing hereditary conditions and intra-uterine maldevelopments with birth injuries as is so frequently done. It is helpful to know what intra-uterine maldevelopments are possible, and to remember that they are apt to be multiple, not only within the nervous system, but also that neural malformations are often associated with non-neural ones. It seems when intra-uterine development does go wrong, it is apt to do so in a multiple and thorough way.

But as stated, we must limit our discussion to the neuropsychiatric conditions caused, or which are reputed to be caused by birth or intra-natal factors, specifically, by *cerebral birth injuries* — or, stating it differently, which of the numerous problems presented to the neuro-psychiatrist are due to cerebral birth injuries? This is no simple topic since the following numerous and rather frequent conditions are involved: infantile cerebral spastic palsies (Little's disease); mental deficiency, and epilepsy. In addition, cerebral birth injuries are considered to be the cause of some, if not many, of the cases of lefthandedness and the related disturbances of speech or language, especially of children; stuttering; lisping; indistinct articulation; reading, spelling, and writing disabilities; aphasias, etc. Even further, there are some evidences that cerebral birth injuries are a factor in certain behavior difficulties of children, some of which result in delinquency and criminality, and also in some deteriorating psychoses of childhood, adolescence, and early adult life.

In spite of the interest in the subject and the amount of work that has been done on it, it seems amazing that we can give no sure statement as to the frequency of cerebral birth injuries, the mortality from the same, or in the case of the sufferers who survive, the late pathologic effects and the later neuropsychiatric syndrones. There is a great divergence of opinion even among authorities. There is a great inherent difficulty in diagnosing a cerebral birth injury at or near birth, and an even greater difficulty in doing so later, in recognizing the late effects or sequels. And probably many birth injuries show no immediate clinical signs and leave no residuals or sequels.

Of all the babies born 10 per cent are either still-born or die in the neo-natal period between the ages of 1-12 months. In several rather large series of post-mortem examinations of still-born babies, or those dying within a few days after birth, observers have reported a very high percentage (about 40 per cent) showing lesions of the brain attributable

to birth injury, for the most part intra-cranial hemorrhages. Rosanoff concludes that cerebral birth trauma occurs in at least one-third of all labors. He considers that 66 per cent or more of fetal and infant mortality is due solely, mainly, or in great part to severe cerebral birth trauma, about 90 per cent of the still-births and neo-natal deaths, and at least 10 per cent of the later infant deaths.

Ford is more conservative, and he says that only 2-3 per cent of all babies alive at birth show clinical evidences of a cerebral birth trauma, and that there are only 2-3 per cent more who have such a trauma, but show no signs of the same. He thinks that only 15 per cent of babies showing symptoms but who survive are subsequently neuropsychiatrically defective. He does not emphasize the possibility of the babies with asymptomatic birth injuries becoming eventually defective.

One group of writers regard cerebral birth injury as relatively infrequent and insignificant in the causation of cerebral abnormalities in childhood. Among them is Tow in his book on "Diseases of the New-born." Another group believe the opposite, among whom are many neuropsychiatrists, who are called upon in later years to explain many obscure conditions, Rosanoff in particular. Their considerations are theoretical, and sometimes with a thin line of reasoning. But their views are going to be presented in this communication.

The incidence of cerebral injury among babies who survive the first few days or weeks is not easy to estimate. As stated, more or less definite clinical evidence of intra-cranial hemorrhage or injury may be detected in 2-3 per cent of all new-born babies. Routine spinal taps in the first 24-48 hours have revealed a bloody spinal fluid in 10-14 per cent of all new-born babies, and this is interpreted as indirect evidence of this high percentage of intra-cranial hemorrhaging at birth. However, it is very difficult to distinguish between blood already in the spinal fluid and adventitious bleeding caused by the spinal needling. The neuropsychiatrist challenges all the results of all the series of routine lumbar punctures so far published because tests were not done to attempt to distinguish between a truly and a falsely bloody tap, tests which should include the character of the red blood cells and the differential of the white blood cells in the fluid, and the character, and especially the benzidine reaction, of the centrifuged supernatant fluid. On the other hand, it must be remembered that it is quite possible to have intra-cranial hemorrhaging without having a bloody tap.

Sharpe, a rather radical neuro-surgeon, reports finding in routine lumbar punctures, blood-tinged or a yellow-colored spinal fluid in 10 per cent of 500 new-born babies, and in half of these there was an appreciable rise in manometric spinal fluid pressure. Hines Roberts obtained a bloody tap in 60 fluids obtained on routine lumbar punctures on 423 new-born colored babies, or on 14 per cent of the cases. But in only 26 or 6 per cent were there any clinical signs of intra-cranial hemorrhage—

and of these 12 died, about 50 per cent of those showing clinical signs, and about 5 per cent of the total cases.

The group claiming a high frequency of cerebral birth injuries with many late effects of the same consider as indirect evidences of their contentions the occurrence of retinal hemorrhage in 20-50 per cent of all new-born babies, and also the frequent finding of late neuropsychiatric conditions which they interpret as presenting the picture of an old cerebral birth injury.

This pediatric section has been previously concerned with cerebral birth injuries, notably last year. Reference should be made to the published transactions of the N. C. State Medical Society for 1937 wherein articles by Dr. Bayard Carter, by Dr. Meyers Hunter, by Dr. J. Buren Sidbury, and by Dr. R. A. Ross, bearing on this subject can be found. This paper may be considered a neuropsychiatric supplement to the above so that the subjects of the early pathology and clinical manifestations, and treatment will be passed over hurriedly, and only sufficient concerning the late pathology will be discussed necessary to promote the understanding of late clinical effects.

Pathology—the early lesions of recent birth injuries—

A great variety of intra-cranial lesions has been ascribed by many different authors to birth injuries, and many of these have been worked out very well pathologically.

As in post-natal head injuries, there is no direct correlation between the external cranial evidences of trauma or even fractures of the skull and damage to the brain although there is a presumptive connection.

It is the damage to the brain, to parenchymatous nervous tissue, that is important. This damage may be early or late, direct or indirect. There may be early and direct damage by a more or less extensive bruising or contusion of the brain, associated with or without vascular disturbances. The few cases without gross vascular disturbance are difficult to detect, especially microscopically.

The most frequent and the best understood early lesions of recent birth injuries are in general vascular ones, and specifically intra-cranial hemorrhages, so that the whole subject of intra-cranial hemorrhages is erroneously confused and identified by some with the larger subject of cerebral birth injuries. It is true that intra-cranial hemorrhages are the greatest cause of neo-natal deaths, and in the babies who survive are directly or indirectly the cause of many and different neuropsychiatric conditions.

The whole subject of the intra-cranial vascular accidents at birth is related to that of intra-cranial vascular accidents in general. A knowledge and understanding of post-natal disturbances of cerebral circulation can be applied to natal ones and vice versa — although intra-natal vascular accidents have certain peculiar tendencies, among which are

the tendencies to be extra-medullary, that is, associated with the meninges, especially with the venous sinuses and with the veins. This holds especially for the great vein of Galen and tears and hemorrhages around the falx and the tentorium, and at the junction of the two.

Hemorrhages may be above or below the tentorium. Subtentorial hemorrhages, especially intra-medullary ones, are apt to be fatal as are those arising above the tentorium, but which filter down below it in any great amount. Hemorrhages are rare above the dura, but may be subdural, in which case they can diffuse in this potential space. Most frequently the hemorrhaging is in the subarachnoid spaces where it can diffuse and be absorbed—not necessarily doing any damage to the brain, especially if small. If absorbed, subarachnoid hemorrhages may leave only some pigmentation of the meninges. A local and especially a large hemorrhage can organize and grow in the process and indirectly damage the brain or cause scar tissue. Subdural and subpial (supra-cortical) hemorrhages are especially prone to do this. There can be tears of the meninges, especially of the dura, without hemorrhaging.

Intra-cranial hemorrhages may be over the convexity of the brain and at the base. They may be unilateral or bilateral. When the bleeding is over the convexity it is bilateral in about one-half the cases, but in most of these cases the amount of blood is unequal on the two sides. As the base of the brain hemorrhages spread promptly throughout the meningeal spaces. Hemorrhages may be slight and insignificant or extensive. They may not damage nervous tissue proper or they may do so either early or late.

The brain can be damaged directly by hemorrhages into the substance, into the grey or into the white matter. Even large extravasations into the brain are sometimes found. Fortunately, intra-medullary hemorrhaging is not common. Focal necroses and diffuse degenerations especially under the ependyma may occur.

Parenchymatous or damage to nervous tissue proper may be caused not only directly by bruising and directly and indirectly by vascular lesions, but also by asphyxiations, a factor emphasized by early investigators. We still know but little about this. Some congenital disturbances of the basal ganglia and the extra-pyramidal system, with athetoid, choreiform, ataxic and other motor abnormalities seem partly due to asphyxia and partly to vascular lesions at birth. In the same way some congenital hemianopsias and hemianæsthesias may arise.

Some factors in the child favoring cerebral birth injuries—

The many neuropsychiatrists, among them Rosanoff, who think that there is a connection between cerebral birth injuries and certain subsequent neuropsychiatric disorders argue that because there are some factors in common, vulnerability of the brain, prematurity and immaturity, multiple pregnancy, and the male sex there must be some connection.

Vulnerability of the child's head—

All babies' heads are more or less vulnerable; and in cases of prolonged and difficult labor or operative delivery, cerebral injury may occur even in the absence of any pathologic degree of vulnerability. But there are cases in which severe and even fatal cerebral injury may occur in the course of a perfectly normal, spontaneous delivery. In such cases a special or pathologic vulnerability must be postulated, especially a vascular one, of the vessels—but also occasionally of the blood (hemorrhagic diathesis). This vulnerability is called upon to partially explain the occurrence of cerebral birth injuries in the birth by cæsarian section which all writers on the subject comment upon, although it must be remembered that cæsarian birth is not without the possibilities of trauma.

There is considerable evidence indicating the existence of an hereditary vulnerability. Among the residuals and sequels of cerebral birth trauma may be considered some of the cases of mental deficiency and so-called essential epilepsy; and in both of these, and in some other neuropsychiatric conditions, there may be sometimes an hereditary influence and this influence may work directly through the germ plasm or indirectly through an hereditary vulnerability of the head at birth, or sometimes in both ways.

Prematurity and immaturity—

Other factors which often determine an undue vulnerability of the fetal head and an increased incidence of cerebral birth injuries are prematurity or immaturity at the time of birth.

Arvo Ylppö, who has been a pioneer and leader in this field of research, is of the opinion that there is no direct correlation between length of gestation and immaturity, that some premature babies may not necessarily be immature and some full-term or even over-term ones may be immature. He thinks that a condition of underweight (below 2,500 grams) signifies immaturity, and that this is of greater moment than prematurity as judged from the duration of the pregnancy, and also that immaturity is conducive not only to a higher infant mortality, but also to a higher incidence rate of cerebral birth injuries and the early and late effects of the same.

3. *Twins.*

If the human female ever very successfully had multiple pregnancies, she seems to be losing that power as multiple pregnancy, twins, triplets, etc., are of ominous neuropsychiatric significance. Among the reasons for this is the tendency in multiple pregnancy to cause prematurity or immaturity. Twins have more than their share, compared with the rest of the population, of mental deficiency and other neuropsychiatric disorders.

4. *Sex.*

Males are more vulnerable and suffer more not only in number but also from the effects of cerebral birth injuries than females. There are more abortions of males and miscarriages of males. In fact, males seem more vulnerable pre-natally, intra-natally, and post-natally.

Clinical—the immediate features

Obstetricians hint that cerebral birth traumas occur and can be surmised during the first stage of delivery. *De Lee* points out the danger signals of an alteration in the fetel heart sounds as to frequency, regularity, strength and rhythm—a persistent slowing of the fetal heart to 100 beats a minute—or an increase to more than 175 without fever of the mother—or the passage of liquor amnii with fresh meconium.

Most of the cerebral birth traumas occur during the second stage of labor. And in the excitement of the situation, the signs of the same in the newborn infant may pass unnoticed. Very few pediatricians are present at a delivery—and still fewer neuropsychiatrists. As a matter of fact, a neuropsychiatrist might be of little value in diagnosing the infant's difficulties or in any other way when it comes to a very young infant as he is more used to the abnormal wailing of the adult neurotic and psychotic than to the normal wailing of a newborn infant. But a cerebral birth injury can be presumed if the baby does not breathe right off and properly and does not cry out, if it is cyanotic, with face and eyes somewhat suffused and with some pallor about the mouth, or if it shows the more ominous so-called asphyxia pallida with limpness and feeble heart action. Sometimes a condition of stupor or coma closely corresponding to the state of cerebral concussion in the adult is present. Muscular twitchings and tonic spasms or epileptiform convulsions and variously distributed paralyses, monoplegia, hemiplegia, paraplegia not only denote cerebral birth injuries, but focal symptoms of the same.

During the first few days the following signs may be observed: (1) persistent vomiting; (2) absence of sucking reflex; (3) impairment of ability to swallow; in severe cases it may be necessary to feed the baby through a catheter; (4) impairment or loss of the grasping reflex in one or both hands; (5) the baby may be abnormally quiet, seemingly drowsy, or it may be constantly whining or crying, as if from severe headaches; (6) spontaneous, coarse, lateral nystagmus is very common, even in cases of slight injury. Cases with symptoms of an advancing hemorrhage or cerebral edema are apt to show a mild, if not a frank, papilloedema.

The recognition of cerebral birth injury is fairly easy when the most important signs of cyanosis, stupor, refusal to nurse, feeble cry and bulging of the funtanels are fully developed. There may be muscular rigidity or twitching or, especially with asphyxia pallida, striking flaccidity.

Pathology—late effects

In dealing with the delayed or late neuropsychiatric problems associated with cerebral head injuries, it is helpful and necessary to understand the different late neuropathological effects and possibilities. Nervous tissue is the master tissue. It can react differently from other tissue. Unfortunately, it has less regenerative power and it can react in its own distinctive way to acute injury—and with progressive chronic changes to old injury.

Subdural hemorrhages may leave a fibrous membrane under the dura mater containing traces of old blood pigment. Diffuse subarachnoid bleeding is probably absorbed without causing any permanent lesions except possibly some thickening of the meninges at the base. Encapsulated supracortical hematomas, it seems possible, result in local atrophy and sclerosis with thickening and possible cyst formation in the overlying meninges. These changes should be unilateral in at least half the cases and usually asymmetrical. Intracerebral cavities (designated false porencephally as opposed to the true porencephaly that is considered due to pathologic developmental processes) occur from extravasations in relation to the cortex or in relation to the ventricular system. The latter are quite common, wedge-shaped, separated from the ventricles by a thin membrane and often bilateral. In these days of frequent encephalograms, these porencephalic cavities are being discovered with increasing frequency, in which case they explain otherwise obscure mental deficiency, epilepsy or a variety of focal brain symptoms and signs. Rarely do cerebral birth injuries cause a hydrocephalus, internal or external—probably not so frequently as supposed, as more careful study has revealed that most cases of hydrocephalus are due to maldevelopment, infection, or to some cause other than birth injury.

Degree of severity of cerebral birth injuries—residuals, sequels

Roughly, three degrees of severity of cerebral birth injuries can be distinguished. The first and most severe degree is obvious at birth or immediately thereafter. It is immediately fatal or usually leads to a fatal issue within a few days, a few weeks, or less frequently, within a year. A second degree, less severe but also usually showing clinical manifestations at or near birth, may be distinguished. The infants may survive beyond one year but are more apt to show evidences of the birth trauma in the shape of consecutive effects, residuals, or sequels.

There is indirect evidence of the existence of a third and large group with a still lesser degree of severity in which the immediate effects are so slight as to pass unnoticed or to be unnoticeable. It is thought that the majority of these cases recover quickly, completely, and permanently. Hemorrhaging in the subarachnoid spaces, if it is not too great and if there are no other complications, can apparently be absorbed without damage. When the spinal puncture discloses blood-

stained fluid but clinical signs of birth injury are absent, the prognosis is apparently very good. But a certain, and as yet unknown, proportion even of these mild, asymptomatic cases are now thought by some to result in a relative mental deficiency or in some insignificant neuropsychiatric anomaly such as left-handedness, etc.

Rosanoff emphasizes the facts that apparently in a normal, spontaneous delivery, showing little or no evidences of cerebral birth trauma either at the time of birth, in the neonatal period or in early infancy, can nevertheless in some cases show months or even years later the more or less characteristic residuals and sequels of such trauma. He thinks that there is a strong, though indirect, statistical evidence of all of this.

It is similar in post-natal head injuries, in children and in adults. Sometimes severe ones result in surprisingly little subsequent neuropsychiatric trouble while sometimes seemingly mild brain injuries result in severe neuropsychiatric complications, especially late ones, There seems to be no direct correlation between the degree of the severity of the trauma and the resulting neuropsychiatric conditions.

There are as yet no data on which to base even an approximate estimate as to the frequency of the second degree of severity, the one in which neuropsychiatric residuals and sequels usually occur or of the third degree in which they may occur. These are the cases, of course, that are of special interest from a neuropsychiatric point of view.

The theoretical distinction between residuals and sequels of cerebral birth trauma is quite obvious. Residuals are the clinical manifestations of brain injury, often brain defects which remain as permanent handicaps after the initial turmoil of the trauma and the resulting repair process have subsided. Sequels are manifestations which make their first appearance after an interval of apparent quiescence, lasting weeks, months or years.

We are forced to assume that during this interval of apparent quiescence slow but progressive tissue change continues to take place—fibrous membranes with a relation to the meninges, contracting scars, interference with the cerebral circulation of blood or cerebrospinal fluid, embarrassment of function of parenchymatous tissue elements, atrophic and other pathologic processes that cause anatomic changes and physiologic disorders.

In practice, it is difficult to draw a sharp line of demarcation between residuals and sequels, especially in connection with the results of cerebral birth trauma; and practically it is not necessary to do so. Neurologic lesions become manifest by an absence or disturbance of function. Some of the functions, such as talking, walking, the performance of other coördinated psychomotor activities and intelligent behavior do not come into play until months or years after birth—so that disturbances of these functions do not become manifest for months or years.

A child sustains a cerebral birth injury, seems to have recovered from the same except for a somewhat subnormal intelligence, but at the age of 9 years suddenly develops a so-called idiopathic epilepsy, or, another child with a similar history at the age of 17 years develops a so-called dementia præcox. Are the "epilepsy" and the "præcox" related to the cerebral birth injury, or lacking the signs of the same at birth or the history of the same in later years (difficult to obtain, especially in an adolescent or adult), are they and some other obscure neuropsychiatric conditions related to a cerebral birth injury that has been missed? Until we have a more detailed knowledge of the processes of morbid anatomy which underlie these clinical manifestations and developments, we shall not be in a position to give a definite answer to these questions. But it seems that we can do so in the affirmative more often than we have been accustomed to do in the past.

Cerebral spastic infantile palsies

In 1861 Little gave the classical and historical description of the cerebral spastic infantile palsies that are known now as Little's Disease. He hinted that they were predominantly, if not entirely, due to cerebral birth injuries. In 1885 Sarah J. McNutt was one of the first to ascribe diplegic conditions definitely to meningeal hemorrhages. In 1897 Freud stated in his elaborate monograph on the subject that, on the contrary, he was unable to find any evidence that diplegia was due to birth injury. The controversy has raged ever since. From the standpoint of modern 20th century neuropsychiatry, we are laboring, as we frequently do, under conceptions and formulations that were started by early and influential 19th century workers, but which, because they were loose and premature, inadequate and incomplete, impede a better knowledge and an advanced understanding. The reasons for connecting birth trauma and diplegia are not hard to find, and a great deal is to be said both for and against this theory. But no one who has studied the subject can fail to see that there are other and greater causes for the diplegias than birth injuries. Ford has closely studied the problem and written well about it in his monograph, in his book on neurologic diseases of children, and elsewhere. Developing a line of logical reasoning, he concludes that intrauterine maldevelopments are predominantly the cause of the cerebral spastic infantile palsies—and that cerebral birth injuries, contrary to the previous and perhaps present popular opinions, cause only a relatively small number of cases.

Ford points out the important clinical facts that bilaterally symmetrical palsies are apt to be developmental in orgin, while unilateral ones, monoplegias, hemiplegias, etc., or bilateral ones that are not symmetrical are apt to be due to cerebral birth injuries. Further, he says that some apparently symmetrical quadriplegic involvements that from the above would be considered developmental are really bilateral hemiplegias—and like congenital hemiplegias in general, are apt to be from birth

injuries. In developmental quadriplegias the legs are usually involved more than the arms. In bilateral hemiplegias, as is the rule in hemiplegias, the arms are usually involved more than the legs.

Mental deficiency due to cerebral birth trauma

Probably a majority of the cases of mental deficiency that we see are caused by heredity. Post-natal causes account for some cases. There is a remainder for which no cause can be clearly assigned. How many of these are due to cerebral birth injury is conjectural. When the birth injury is severe and a severe mental deficiency follows, the connection is obvious. But slight birth injuries and also relative mental deficiency are common and the connection between the two is obscure and difficult to establish.

Rosanoff, in his chapter on cerebral birth trauma in his new and revised 7th edition of his *Manual of Psychiatry,* seems very much interested and writes extensively and argues cogently in favor of a relationship. He says that a patient who is mentally deficient because of a birth injury often shows the same difficulties of behavior which any traumatic brain case is apt to show and which a hereditarily mentally defective rarely shows. Rosanoff has intensively and extensively studied twins and from them he has learned a great many things of neuropsychiatric interest and importance. He cites monozygotic or identical twins, in which one with no birth injury was normal in every respect while one who was markedly underweight at birth and suffered a head injury in the course of a difficult, instrumental delivery showed mental deficiency and a series of complications, each one of which is known to be produced at times by a cerebral birth trauma, convulsions, behavior difficulties, psychotic manifestations, and progressive mental deterioration.

Further, Rosanoff argues that because there is a greater number of mentally deficient among the first born than can be accounted for on the basis of heredity; and in that it is known that there is a greater number of birth injuries in primiparous than in multiparous, all of this is in favor of cerebral birth injury as the cause of some mental deficiency.

Several different authors have commented on the fact that both in the cases of mental deficiency due to heredity and in those due to birth injuries, the deficiency is of a relatively mild degree, that severe degrees are apt to be due to development trouble but that occasionally birth injuries, unlike heredity, do cause a severe mental deficiency.

The relation of cerebral birth injuries and recurrent convulsions (Epilepsy)

Lesions of the brain, especially in children, are apt to lead to recurrent convulsions (epilepsy). Patients with cerebral maldevelopments, with cerebral spastic infantile palsies, whether on the basis of a maldevelopment or birth injury, or with any of the focal brain signs that signify

focal brain lesions are apt to be convulsive. But these cases are secondarily so. How often are the cases that show no focal signs or symptoms, the so-called essential epilepsy, due to cerebral birth injury? How often are they due to cerebral birth injuries that have been missed or forgotten?

Ford does not think there is much evidence connecting birth injuries with "essential" epilepsy, especially in his earlier monograph on the subject. He states here it seems probable that approximately 2 or 3 per cent of all epilepsies are related to birth injury. Later in his book on nervous diseases of childhood he hedges as to this.

From his studies of twins, from the fact that epilepsy is so often associated with the non-focal mental deficiency that he relates to cerebral birth injuries, from the facts that, as with birth injury, epilepsy is more apt to occur in the first born, in males, in premature and immature babies, Rosanoff concludes that there is a close connection between cerebral birth injuries and some cases of epilepsy, especially the epilepsies that develop before the age of 20. In fact, he surmises a closer connection than with heredity. Rosanoff thinks that the frequent association of epilepsy with infantile cerebral palsies, mental deficiency, behavior difficulties and psychotic disease and deterioration in young people is of great theoretical significance and that often a cerebral birth injury is the common cause of all of them.

Cerebral birth injuries and left-handedness and language disturbances

Since left-handedness occurs with greater frequency in epileptics than in the unselected population and since he relates epilepsy and cerebral birth injuries, Rosanoff advances the theory that some cases of left-handedness seem to represent but another clinical manifestation of partial decerebration caused by birth trauma, especially of the left hemisphere, robbing it of its dominance. Like in epilepsy, he thinks that the greater frequency of left-handedness in males and in the mentally defective tends to point to some relationship with birth injuries.

Other observers have held similar theories, especially those working with congenital aphasias and with disorders of speech and other disturbances of language. They think that the relationship between left-handedness and the many speech or language disturbances of childhood, stuttering, lisping, indistinct articulation, reading, spelling and writing disabilities, is significant and that any and all of these can be due to a disharmonious functioning of the two cerebral hemispheres and further that this, in turn, may sometimes, if not many times, be due to cerebral birth trauma.

The relation of cerebral birth injuries and behavior difficulties of children, delinquency and criminality

While he concedes that the cause of behavior difficulties of children and their delinquency, and the criminality of older persons is manifold

and highly complicated, Rosanoff thinks that because they are related to a certain type of mental deficiency, epilepsy and psychotic disease that he, in turn, relates to cerebral birth injuries, that all of these conditions are sometimes related. Again, males and first born are more involved than others in all of these conditions. And Rosanoff has studied monozygotic or identical twins with the same heredity and environment, one normal, the other abnormal and presenting from an early age and in a most consistent way contrasts in intelligence, temperament, character and behavior which he could account for only on the assumption of a birth injury in the twin showing the abnormality, although he did not always clearly have a history of the same.

On the other hand, Ford and others have commented on the fact that so often there is no great disturbance either of intelligence or of behavior in cerebral birth injuries, especially the milder ones, and that in some severe injuries the intelligence is little if any impaired. Mention has been made of the amiability and tractability of some of the patients with old birth injuries rather than their behavior difficulties and problems.

Deteriorating psychoses of childhood, adolescence and early adult life

Modern psychiatrists are dissatisfied with the current conceptions of that group of psychoses known as schizophrenia or dementia præcox. It seems as if what Kraepelin in the 19th century thought was a solution is proving in the 20th century to be an incompatible mixture. Unquestionably this is a heterogeneous group that has some clinical resemblance, mainly in the fact that there is a deterioration or dementia in early life, but cases in this group arise from numerous and widely different causes. It seems possible that the future will show that cerebral birth injuries may be directly or indirectly the cause of some of these psychoses, especially if they are related to or are complicated by a mental deficiency or by recurrent convulsions, or by both, and if the onset is early in life, especially in childhood or adolescence.

In a few cases psychiatrists have observed the following lugubious train of events in a patient: a mental deficiency is discovered in infancy or in early childhood as a residual of a birth trauma; an epilepsy may develop as a sequel in childhood or adolescence; psychotic symptoms may appear in late adolescence or in early adult life as a later sequel; and a deterioration may be a still later and more gradual development in the course of years.

At present, all that can be said is that we encounter certain deteriorating psychoses that have an onset early in life in which cerebral birth injuries can be incriminated as satisfactorily, or rather as unsatisfactorily, as any other factor. It is surprising and regrettable that our present ignorance and lack of investigations concerning this important subject allows us to state nothing more definite.

The causes, treatment and prevention of cerebral birth injuries

Something has been said concerning the factors in the baby predisposing or causing cerebral birth injuries. Factors in the mother belong to the province of gynecology and obstetrics and constitute the great chapter on the dystocias.

Briefly in passing some of the principal traumatizing maternal factors that might be mentioned are: contracted pelvis, rigid soft parts, protracted labor due to weak contractions of the uterine or abdominal musculature, precipitate labor, abnormal presentations, including breech, complications necessitationg rapid, forced delivery, such as placenta praevia, eclampsia, prolapse of the cord, etc., and rough obstetric technique.

Better obstetrics, better training, skill, and judgment by those doing obstetrics would prevent some of the birth injuries—the best obstetricians agree to this—and also to the further proposition that better obstetrics sometimes means more conservative obstetrics.

Because of the failure or inability to distinguish between birth injuries and hereditary conditions and intra-uterine maldevelopments, the obstetrician is probably blamed more times when he is guiltless than censored when he deserves to be.

More at fault than the obstetrician are the silly, arboreal animals that made the mistake some 50 million years ago of coming down out of their trees to become a biped, thereby tilting their pelvises and distorting the natal track.

Among the measures that would tend to diminish the frequency of cerebral birth injuries would be: better pre-natal care of the mother with a view of recognizing and eliminating complicating conditions at birth; avoidance of the imprudent use of oxytoxics; the use of an elective abdominal delivery in complicated and threatening cases instead of difficult manual and instrumental delivery; extra care and precaution and skill in forceps and breech deliveries and in version. Complicated obstetrical procedures and manipulations should not be attempted by those who do not have the required knowledge and experience.

The methods of treatment of recent cerebral birth injuries that are advocated or followed out cannot be gone into here. In general and in brief, most neuropsychiatrists would be inclined to be conservative, remembering that the less handling and the more rest a patient with a head injury receives, especially one in which there is active hemorrhaging, the better. Caution and judgment should be used even in the matter of lumbar puncture. If there are clear indications either diagnostically or therapeutically, one or even repeated punctures can be done, but not routinely or indiscriminately. It must be remembered that a spinal tap can disturb an intra-cranial state that is successfully adjusting itself.

Very occasionally an attempt is made to needle an intra-cranial hematoma. The more the neuropsychiatrists have watched this and the more

radical procedures both for the early and also the late clinical manifestations of cerebral birth injuries that are advocated by some radical neurosurgeons, the less he thinks of them.

The outlook in congenital conditions in general and cerebral birth injuries in particular, especially in those cases showing neuropsychiatric complications, is not favorable. What about the chronic cases, often poor and unpromising material, which the obstetricians and the pediatricians are apt to eventually and to gladly turn over to the neuropsychiatrists?—often adding insult to injury by commenting on what unlikely cases the neuropsychiatrist sometimes has to handle—goading the neuropsychiatrist on occasions to think, if he does not express the idea, that he would not have to handle some of these cases if the obstetricians and pediatricians were not so dysgenic as to permit and to encourage the survival of some of the severely compromised cases. The triumph of the pediatrician in keeping alive some very premature or traumatized or physically or mentally defective babies can, in some ways, be challenged.

Which brings up the ticklish subject that sometimes by taking into consideration the race rather than the individual, by applying sterilization, birth control, and birth spacing we can all do better toward the prevention of birth injuries together with some related neuropsychiatric conditions in those families in which because of an hereditary brain vulnerability and other hereditary causes they seem to occur with the greatest frequency.

The treatment of the late neuropsychiatric problems depends upon the condition. The poor little victims surviving into childhood following cerebral birth injuries, especially if palsied, feeble-minded, or epileptic, or showing behavior difficulties should have available the provisions for the chronic neuropsychiatric patients that are at present so woefully lacking. There are too few institutions for the child who is chronically neuropsychiatrically handicapped. Yet he so often needs to get away from home and to have the custody, supervision and special education and training such as only an institution can give. The education and training has to be more individual, usually more vocational than academic, and often it involves special motor or speech or language education.

In all fairness to the child, to the family and to the community, better and special neuropsychiatric facilities and organization should be provided. This will and should demand the interest and the coöperation of everyone.

Chairman Geddie: Gentlemen, due to the lateness of the hour and the comprehensiveness and completeness with which the essayist has handled his subject, even at the risk of offending an invited guest, I am going to omit the discussion on this paper, and will call for the report of the Nominating Committee at this time.

Dr. S. Stewart Saunders: The Nominating Committee wish to report the name of Dr. D. E. Robinson of Burlington as Chairman, and the name of Dr. Jean Craven of Lexington as Vice Chairman.

Chairman Geddie: You have heard the report of the Committee. What is your wish?

It was moved and seconded that the report of the Nominating Committee be accepted, put to a vote and carried.

Chairman Geddie: Dr. Robinson, the meeting is yours. (Applause.)

Chairman-Elect Robinson: I don't know whether I should thank you gentlemen for this honor and job, but I do wish to say that I appreciate your confidence in me.

Is there any new business to come before the meeting?

There is a notice here that Dr. Geddie has asked me to read. There will be a short business meeting of the North Carolina Pediatric Society at the close of this meeting. Will all members of the Society please remain?

If there is no further business, the meeting stands adjourned.

The meeting thereupon adjourned at 5:10 o'clock.

SECTION ON PUBLIC HEALTH AND EDUCATION

TUESDAY AFTERNOON

May 3, 1938

The Section on Public Health and Education of the Medical Society of the State of North Carolina convened at 2:15 p.m., in the West Corridor, The Carolina, Pinehurst, Dr. Roy Norton presiding as Chairman.

Chairman Norton: I think we have already made a good start in this section with the excellent paper presented by Dr. Cooper representing this section before the general session this morning. I hope all of you heard it, and if you did I am sure you enjoyed it. Dr. MacNider said he wanted to come first because he wanted to get away, but he is in there talking to someone so I am going to call on Dr. Richardson for his paper according to schedule, which is entitled, "A Tuberculosis Case-Finding Program for a Rural Health Department." (Applause.)

Dr. Richardson presented his prepared paper. (Applause.)

A TUBERCULOSIS CASE-FINDING PROGRAM FOR A RURAL HEALTH DEPARTMENT

William P. Richardson, M.D.
Chapel Hill, N. C.

Although there are numerous important facts in the epidemiology of tuberculosis which we do not know, a great reduction in the present incidence of the disease waits not on more knowledge, but on more

effective application of knowledge and techniques which we already possess. The immediate problems in tuberculosis control are more adequate funds, and the development of programs to make use of available techniques, and to adapt them to the various social and economic conditions with which we are confronted.

We must recognize the important part which rising standards of living have played in the reduction of tuberculosis mortality during the past 50 years, and the fact that future prevalence of the disease will be influenced in considerable measure by economic and social factors over which the physician and health worker have no control.

However, it is reasonable to believe that, in spite of important gaps in our knowledge, and in spite of the important influence of these general factors, a further significant and increasing reduction in the tuberculosis toll can be brought about through more effective utilization of knowledge and measures now available.

One has only to look at the greatly improved methods of diagnosis with the x-ray and fluoroscope, and the greatly improved prognosis for even advanced cases with the various types of collapse therapy now being used. We have on the one hand better methods of detecting lesions in the most hopeful minimal stage, and on the other hand more successful methods of treating more extensive lesions, methods which result in arresting an increasing number of cases, and in rendering many more non-infectious.

In addition, there is the epidemiological fact of familial aggregation of tuberculosis. Early location and control of the first case in the family will prevent the secondary cases which so frequently occur.

The present objective, therefore, is more comprehensive utilization of these improved techniques, making them available to the whole population. A community program to accomplish this, then, would include:

1. Adequate diagnostic facilities for the discovery of new cases early enough to offer promise of arrest, and before they have had the opportunity to spread the infection far and wide.

2. Supervision of homes where tuberculosis exists or has existed, with periodic examination of members of the family who have been exposed.

3. Ample facilities for treatment of hopeful cases, and for isolation of late, sputum-positive cases.

4. A consistent, intelligent educational program.

Readily available diagnostic facilities, supervision of cases in the home, and instruction of the public can obviously be carried out more efficiently by a continuous local program than by any type of periodic clinic service, and the full-time local health department would appear to be the logical agency for administering such a program.

With this idea in mind, the District Health Department serving Orange, Person, and Chatham Counties has inaugurated, with the help

and advice of Doctor P. P. McCain and his staff as the North Carolina Sanatorium, the program which will be explained below.

The Orange-Person-Chatham District comprises a largely rural area of around 1,500 square miles, with a population of 71,000, approximately one third of which is colored. There are several industrial plants, supporting an industrial population of 4 or 5 thousand.

The area has 18 practicing physicians, all except one doing general practice. There are three small hospitals, several small x-ray machines, and one vertical fluoroscope. In addition, the infirmary of the University of North Carolina has a large modern x-ray machine which is available in some circumstances for chest radiography. There are no facilities for the treatment of tuberculosis locally.

Five-year average death rates from tuberculosis for the three counties are:

Orange County — 42.0 per 100,000.
Person County — 63.4 per 100,000.
Chatham County — 40.3 per 100,000.

The present health department was organized in 1935, and since its organization has given nursing supervision to all reported cases which were being treated at home. Diagnostic clinics have in the past been held at irregular intervals. Recently several of the physicians with x-ray machines have been interested in tuberculosis, and have uncovered a good many new cases. Other patients have been carried to the state sanatorium and to clinics in Durham for examination. It was evident, however, that these efforts were making little headway in the real solution of the tuberculosis problem.

An analysis of tuberculosis cases on the health department's register after 18 months of operation revealed that 90 per cent had been moderately or far advanced at the time of reporting, and 25 per cent had died within 6 months of reporting. These figures demonstrate eloquently the need for some sort of comprehensive diagnostic program.

The program I am describing is based on the recognized efficiency of the fluoroscope with a Patterson B screen in the diagnosis of adult type tuberculosis. Fluoroscopic examination has been used with signal success by the extension division of the North Carolina Sanatorium for several years, and its incorporation into the regular program of our department is an effort to provide a diagnostic service which will meet the requirements of efficiency, economy, and constant availability.

Fluoroscopic examination is somewhat less efficient than x-ray pictures in childhood type tuberculosis, and it does not give a permanent record for comparison, but according to Thomas and Denholm, it is about 95 per cent as efficient in adult type disease, and is far less expensive. Compared with physical examination of the chest, it is considerably more accurate and it permits the examination of 4 or 5 times as many patients. Early, or even moderately advanced tuberculosis may give few if any

definite physical signs, but most cases are readily detected with the fluoroscope. About 40 patients can be examined per day by this method.

The unit which has been procured consists of a deluxe Kaleket vertical fluoroscope with Patterson B screen, installed in a Trailcar Junior house trailer shell. Connections and heavy cable are provided for connecting to the switch box of an adjoining building, and the trailer is wired to provide outlets for light and heater or fan. Windows are provided with light-proof covers, and the location of the machine in the center of the trailer divides it into two compartments, thus providing for a dressing room and an examining room.

Clinics are held at frequent intervals at the four offices of the department, and it is also planned to hold them around the district at rural schools were electricity is available.

A considerable part of the problem is locating those who ought to be examined and getting them to the clinics. The objective, of course, is to find the disease in the earlier stages, and, since in these stages tuberculosis is frequently entirely unsuspected because of the absence of any significant symptoms, it is necessary to approach the problem, not from the angle of symptoms, but from the angle of probable or possible exposure to tuberculosis.

The first group to be attacked is, naturally, the contacts of known cases, and of those who have died of tuberculosis during the past five years. These contact groups will not be dropped after one examination, but will be reëxamined periodically. Special emphasis is being put on the importance of examining all the members of the family who are old enough for satisfactory examination with the fluoroscope.

Another approach is being made to unsuspected cases through the tuberculin testing of school children, and examination of family contacts of those reacting positively in hope of finding the source of their infection.

In addition to these two groups, which include the most definite suspects, it is hoped to offer routine examination to school teachers and to domestic servants in private homes. Of course, patients referred from physicians are examined, and, in so far as possible, those who apply for examination without any referral.

All patients in whom suspicious or definite lesions of tuberculosis are found are referred to the physician of their choice with the recommendation that an X-ray picture be made. The letter to the physician giving the fluoroscopic findings includes a self-addressed postal card which he is asked to mail the department when the patient reports to him, giving the results of the x-ray picture, if one is made.

The big problem, of course, is treatment of cases discovered. As many cases as possible are referred to the State Sanatorium. Others are cared for at home under the supervision of their physician. They are visited regularly by one of the public health nurses who assists the family in

working out plans for following the physician's instructions, and instructs them in disposal of sputum, sterilization of dishes, and all the other methods of protecting others.

To be complete, the district's program would, of course, include treatment facilities, and the need for these is being emphasized as new cases are uncovered, but even in their absence, the patient can take measures to protect both himself and his family if he knows he has the disease. It is hoped that increasing evidence of the need for such facilities will prove the incentive for the establishment of a modest tuberculosis home, and proposals are already being made to that end.

From an educational standpoint, tuberculosis has for the past year been one of our major subjects in discussions with lay groups. Parent-teacher associations and civic clubs contributed to the trailer x-ray unit, and the periodic appearance of this unit in the various communities serves to dramatize our tuberculosis program as nothing else could do. Newspaper articles have been published and educational material widely distributed.

Just how effective the present program will be, and how soon it will show definite results in the reduction of tuberculosis remains to be seen. Tuberculosis is a relatively slow disease, and the results of control efforts can be expected to reveal themselves slowly. One immediate concrete objective is to increase markedly the percentage of cases found in the minimal stage, and some progress is already being made in this direction.

While the whole purpose of the program is to meet local needs, and not research into the epidemiology of tuberculosis, records are being set up in such a way as to make possible analyses of significant facts regarding the distribution and occurrence of tuberculosis in the area.

To summarize briefly:

1. The four immediate needs in a local program for tuberculosis control are adequate diagnostic facilities, supervision of homes where tuberculosis exists, adequate sanatorium facilities for the treatment of cases, and a consistent educational campaign.

2. The Orange-Person-Chatham Health Department has secured a trailer, equipped with a fluoroscope for holding regular tuberculosis diagnostic clinics throughout the district.

3. Special emphasis is being placed on the examinaton of the whole family group.

4. The program of the health department includes regular visiting by public health nurses to all patients, contacts, and suspects, as well as efforts at instruction of the public.

5. An active diagnostic program such as that described emphasizes the need for increased sanatorium facilities.

6. Results measured in lower tuberculosis incidence and mortality will

probably reveal themselves slowly, but already the percentage of cases found in the minimal stage is increasing.

Chairman Norton: This is an unusually good paper on tuberculosis. I suppose most of you heard the good discussion on tuberculosis yesterday by Dr. Denholm, Dr. McPheeters, Dr. McCain, and Dr. Smillie, and others. This covers another very interesting and a very practical way of handling the problem in the local departments. Dr. McCain has been asked to open the discussion of Dr. Richardson's paper.

Dr. P. P. McCain (Sanatorium): Mr. Chairman, I think this group already realizes the importance of an early diagnosis. This phase of it was emphasized particularly yesterday and brought out quite clearly by Dr. Richardson, so I will not discuss that phase of it any further. I think we should emphasize the fact, too, that wherever sufficient diagnostic facilities are available in any community for this work to be done by the regular medical profession it should be handled that way, but in all communities where facilities are not available for diagnosis I think the plan which Dr. Richardson has inaugurated is the proper solution of the problem. We have been following an experiment which he is working on. We all know that, unfortunately, the vast majority of the people who have tuberculosis are poor people. While it is ideal to have an X-ray picture on every positive tubercular reactive it is not practical to have it done. Usually tuberculosis occurs in large families. If a man has six or eight members in his family that have positive tuberculin tests it is absolutely impossible for him to pay for each, for often it costs as much as three to five dollars for X-ray pictures. Many times the budgets of the various charity organizations are not sufficient to enable that to be done.

Fortunately, in the fluoroscope we have an instrument which, with the modern improvements made on it, with the new type of screen and the fine focus tube, enables us even to diagnose early tuberculosis. Most cases of early tuberculosis can be diagnosed by someone who is expert in the use of the fluoroscpoe. I think it is altogether feasible for health officers or others to learn to use the fluoroscope. Naturally, it will take some time to become very expert but after they have had a few weeks of training, intense training, where they see hundreds of cases, many that are normal and many that are positive, I think that it is not likely that many cases of tuberculosis that are of clinical significance, and especially those that are positive, those who are in danger of spreading it to others in the family, will be missed.

There is a portable fluoroscope now that is made by the Keleket people that is very practical. It is a little more expensive than the stationary type. We have two already and we are purchasing two more, at a cost of about $1,250 each, that you can carry around very easily and are very suitable for our district health departments. You don't have to have this portable type of machine in an absolutely dark room. It has a col-

lapsible hood which you can work in a room that is fairly light. This has a big advantage in country communities, if you are going to use it in a good many different places, so I think that this sort of procedure is exceedingly valuable.

As Dr. Richardson well said, "We need facilities for examining the contacts, not just once, but many times, as these contacts are the ones that are going to break down the tuberculosis." A great many of them think if they examine them one time that is a guarantee they will never have tuberculosis. Well, those others who have tuberculosis may be examined today and be found negative, and next year or the year after, sometimes several years after, a case of tuberculosis is going to crop up.

If we can discover these cases in various stages we are going to be able to do a lot towards controlling tuberculosis. I hope the time is going to come soon, as we said yesterday, when all teachers will be required to present a certificate that tuberculin tests are either negative or that they have been X-rayed and had a certificate from a capable man that they have been fluoroscoped or X-rayed, and found that their tests are negative. It is a fine thing to take a fluoroscopic examination of servants and others who are likely to spread it among children in eating places and things of that sort.

I feel that the time is going to come when every health department is going to realize that it is not a first-class health department unless it either has a fluoroscope of its own or unless it has arrangements with private X-ray men where fluoroscope is available for examination if needed.

Chairman Norton: Thank you very much, Dr. McCain. This excellent paper is now ready for discussion, open discussion. I would like to ask Dr. Richardson a question that I think all of us would like to know right now, and that is the approximate cost of the trailer and the whole outfit that he has.

Dr. Richardson: Including a few little things, tables and chairs and things that I have to have installed, such as heavy over-sized, heavy-duty tires, it would cost about $1,350.

Chairman Norton: Thank you. I will be glad to have someone else discuss Dr. Richardson's paper.

Dr. Foster (Fayetteville): I would like to ask one or two questions. Just what age child can you effectively fluoroscope? Just how young an individual can you fluoroscope? My second question is regarding the fact that Dr. McCain said that it took a health officer three or four weeks to become efficient in the use of a fluoroscope.

Dr. McCain: A few weeks.

Dr. Foster: You are talking about the average health officer, not a person like me. I am just wondering about that as to how long it would

take an individual who knows nothing about X-rays and nothing about the fluoroscope to become efficient. It is not efficient to use the fluoroscope in examining a person if the person does not understand the fluoroscope. It is a loss of time and money, and it is my opinion it is not worth very much, so I think that when these fluoroscopes are added to departments they should be used by somebody who is quite efficient. I am not saying that Dr. Richardson is not efficient in the use of the fluoroscope, but I mean in general. If I had one I should be efficient in its use, if I were going to try to diagnose tuberculosis by its use.

I was asked yesterday by an out of town visitor if paper plates were being used in North Carolina to make X-ray plates. I was in New York sometime ago and I noticed up there in the New York City Health Department that they were using paper plates right along in the X-raying of adults. I was asked if paper plates were effective to X-ray the chests of children, and I had to admit that I was ignorant and knew nothing about the subject except they were using them for adults in New York right along. I understand, however, it is some kind of a patented process and everybody cannot get hold of them to use them. Somebody like Dr. McCain could perhaps give us some information along that line.

Speaking of school-teachers being examined for tuberculosis, we found three years ago two school-teachers in our county who were active cases of pulmonary tuberculosis. Our tuberculosis program consists of tuberculin testing all the children every three years and X-raying positive reactions of it. Three years ago we did this and we found one rural school-teacher teaching the first grade, and also a first grade school-teacher in one city school who both had open, active lesions of tuberculosis. One of them had positive sputum, and the other we did not find a positive sputum in. However, she did have X-ray evidence of tuberculosis.

They were immediately taken out of the schoolhouse and immediately went to bed, one of them in the Sanatorium, and the other one went to bed at home. I know it is important, and I do hope that soon all school-teachers will be required to present satisfactory evidence that they do not have tuberculosis, not just an occasional examination by the family physician for a certificate or something from the family doctor who has treated them since birth or been a friend since birth, and giving a statement that they do not have these things, but something more definite.

I do know that about ninety-five per cent of all the health certificates that teachers turn in are this kind of an examination. The doctor looked at them and said, "You look mighty good. Have you lost any weight during the summer time?" In the meantime, he has signed it and gets it ready to hand in. That is the kind of examination they get.

Chairman Norton: Thank you, Dr. Foster. We will be glad to hear from someone else now.

Dr. S. B. McPheeters (Goldsboro): Mr. Chairman, I think that Dr. Richardson's paper and work have great significance. Some of our wealthier counties have sanatoria that might be described as magnificent. That is very well for them but that is not the problem of tuberculosis in North Carolina. There are more than ten counties that have no such possibility where there is one county that has, and we have got to take care of the ninety per cent that cannot be cared for that way. Nor can they be cared for by the state sanatoria facilities.

Here is a well conceived, well equipped effort to solve the tuberculosis problem in rural counties. Apart from the acclaim that Dr. Richardson deserves I trust that we are all, and that applies to me, going to regard it as a challenge to do something of the same sort in our own counties.

As to the problem of whether a truck is desirable or whether you would want a portable fluoroscope, that can be solved by the individual county, but the general set-up is something I think that we all ought to set as our objective under the leadership that Dr. Richardson has manifested.

Chairman Norton: Thank you, Dr. McPheeters. Dr. Ringer is in here to discuss Dr. MacNider's paper for one thing, and I think while he is here we would like to hear from him on this paper. Can we have a word, Dr. Ringer?

Dr. Paul H. Ringer (Asheville): I did not expect to say anything, but while Dr. McPheeters was speaking one or two ideas came to my mind. I cannot enlarge or amplify at all with regard to the portable fluoroscope and the truck and so forth that goes around. That is all very good and it is very stimulating to know that this thing is being carried on in rural sections. However, there is one problem that has to be dealt with, and that is the care of these sputum positive cases until such a time as they can be admitted to the sanatorium. This applies primarily to the lower economic branches. In the higher economic branches there is no difficulty because the individual is practically isolated in a well governed and well run house and the problem solves itself, but for the poor people living unhygienically in crowded quarters it is a different proposition.

We find that throughout the country, more and more, there are being established beds in general hospitals for tuberculosis. There are about 90,000 beds for tuberculosis in this country, and 15,000 of them are in general hospitals. It seems to me that some provision should be made in the hospitals where these cases could be properly isolated, and where that is not possible why would it not be feasible to have a tuberculosis unit in the county home?

Treating tuberculosis is not in itself a particularly expensive matter, and certainly these people could then be adequately housed and adequately cared for pending the time when they would be admitted to the state sanatorium. In that way the contacts would not be in as much

danger as they have been during the three or four months it takes in order to get the patient into our state sanatoria. By following out such a scheme prompt isolation could be effected and the dangerous focus of infection moved and everybody given a better chance to escape developing the disease.

Chairman Norton: Thank you very much, Dr. Ringer. Dr. Parks, have you anything to say? I believe you have a unit over there in your new county hospital.

Dr. L. L. Parks (Tarboro): There is very little that I can add to the paper. I think as far as the examination of teachers is concerned each county can work out this problem through their county board of health. We have a regulation in our county that every teacher has to have a tuberculin test, and if it is positive she has to have a fluoroscopic examination or X-ray. If a teacher comes in there from some other county and she has a health certificate we do not accept it. We have got to have an X-ray or tuberculin test before we accept her.

The county is rather fortunate because we have our own tuberculosis hospital which is equipped with X-ray and fluoroscope, and we are trying to work out once a month a diagnostic clinic. In other words, those people that cannot pay for an examination can come in there and we make a diagnosis as early as possible. We are just getting started. I know that once a month is not very often but as time goes on we hope to increase the number of clinics, if necessary. I enjoyed Dr. Richardson's paper very much.

Chairman Norton: Thank you, Dr. Parks. I would just like to call attention to these figures which are figures for eight years in deaths and nine years in illnesses among children five to nine and ten to fourteen and fifteen to nineteen. I would just like to call attention to the place that tuberculosis holds among the deaths, fifth. Perhaps some of us hadn't thought it came that high. It is second here and first over there as we would expect, and then illnesses are approximate because we don't have the exact figures for the nine-year period, and we have to estimate the rest of them, and it is ninth here, eighth here, and fourth here. (Indicating figures on chart.) We would like to have some further discussion.

Dr. J. H. Williams (Clinton): I think this paper has been very ably presented and, I have had this one thought since he has presented it, and that is that tuberculosis and syphilis are both chronic diseases. We are putting on a drive to make an early diagnosis in both diseases. I believe that Dr. Reynolds and I, and all of us, hope that we can get different clinics distributed about in our departments, and it occurred to me there might possibly be these two clinics working together so that the venereal clinic would not be known entirely as a venereal clinic. The physician in charge of that clinic would perhaps diagnose

the condition of syphilis in the patient, particularly in fluoroscoping the heart, and if there was a cardio renal syphilis, then it would help the problem.

There is a problem in making diagnoses among this class of people, the transportation problem. It is rather difficult in the larger counties to get people to come to the health department for an examination, much less a check-up every year. I make that just as a suggestion.

Chairman Norton: Thank you, Dr. Williams. Is there anyone else?

Dr. John W. McGehee (Reidsville): There are one or two questions that I would like to ask. About sixteen months ago we had a tuberculosis clinic in our county and we tested three children from a tubercular home, and all three of them were negative. We began them again the other day and all of them were full positive reactions. This happened in sixteen months. The mother was negative sixteen months ago and she is still negative. They have not had any more exposure that we know of from the time we tested them sixteen months ago than they had at that time.

About three or four years ago we had a tuberculosis clinic and the office clerk was a little skinny woman, and one of the nurses was a very handsome woman and weighed mighty near as much as I do. She wanted the office clerk tested and she made an agreement with her if she would take the test that she herself would. The nurse had to go to bed from the reaction in her test and the office clerk laughed at her, and she didn't have a sign of a reaction.

Another question I would like to ask is what in the world are you going to do with a teacher that shows reaction? Are you going to raise a racket when you get a teacher that reacts to tuberculosis? It is hard enough to keep a child in school that has reacted, but when you get a teacher that reacts and you want that teacher to go on teaching you are up against a problem. I don't know whether you remember the name or not, but in that same tuberculosis clinic we had about sixteen months ago we tested one of the principals of one of the leading schools in our counties and we found evidence of tuberculosis at that time, but not to the extent of positive sputum or anything. He was coöperative enough to come to the sanatorium and take a rigid examination there. One of the physicians in his town called me up and told me that he must do something about it.

I certainly would like to know what to do under those circumstances, and I would like to know what to do with these three children who reacted. How are you going to handle it? One of our nurses tested six or ten years ago did not react. She was tested in this clinic and she did react. She was joking about it, but where she contracted it in the time from the first test to the present time she does not know because she had no more than routine contact with tuberculosis cases. I would like to know what you are going to do with teachers who react so that you can

justly tell your constituents in your school district and tell your school officials that it is perfectly safe for this teacher to go on teaching.

CHAIRMAN NORTON: Thank you, Dr. McGehee. Is there any further discussion? If there is no further discussion we will be glad to hear from Dr. Richardson who will close the discussion.

DR. RICHARDSON: Before I conclude the discussion I would like to have Dr. McCain answer Dr. Foster's discussion about paper films, as I have no knowledge about them.

DR. P. P. MCCAIN (Sanatorium): I didn't hear all that Dr. Foster said. If it was just about paper film I would like to say that as a rule it is not satisfactory. Paper films cost less than other films, but the regular films are certainly worth the difference, I think, and it is just as well to pay a dollar for a good film as to pay seventy-five cents for the paper film. We have tried very few, but we have tried a few and there have been quite a number of clinics which found that paper films were very unsatisfactory.

DR. WM. P. RICHARDSON (Chapel Hill): I appreciate all of the discussion and the suggestions that have been made. I am sorry that I cannot answer all of the questions that Dr. McGehee has raised that go deep into the matter of interpretation of the tuberculin test, and just what it takes to cause a positive reaction.

In regard to the reacting features I suppose you are speaking of those who reacted positively to the tuberculin test?

DR. MCGEHEE: Yes.

DR. RICHARDSON: That is a problem I have not been particularly faced with. If they react positively and have not had an examination I think they should have an X-ray as a matter of precaution, but the test in itself, in the absence of any clinical tuberculosis, certainly does not affect their ability to teach or make them in any way dangerous persons.

DR. MCGEHEE: Most of us have got sense enough to know that, but how are you going to get that same sense to the other people?

DR. RICHARDSON: I don't know. I have not been faced with that because they have not gotten particularly excited about a tuberculin positive reaction except as I told them they should have further examination. I suppose it is largely a matter of education.

In answer to Dr. Foster's question as to at what age the fluoroscope can be satisfactorily used, it is not entirely a matter of age. It is a question of type of disease. In a child the main lesions in the glands and the primary focus in the formatory stage don't show very satisfactorily in the fluoroscope whatever the age. Of course, more extensive childhood type lesions and parenchymal lesions in small children will show up on the fluoroscope just as in adults. Our policy has been to

discourage the examination of children under ten years of age until they have had tuberculin tests. We have not made that a hard and fast rule because it hasn't always been possible to get them tested, and if we do get them we would rather do what little good we can do by looking at them and not examining them under ten years unless we have had a positive test. We do look at them from ten years and over with the idea of taking the precaution that certain of these lesions might escape detection that way.

I don't think that I can discuss very well the question of how long it takes to become proficient, because I don't know how proficient I am yet myself. I feel, however, after a person has had several weeks of intensive study and been checked on and supervised by a person who is skilled in tuberculosis that he can with caution go out on his own responsibility. Dr. McCain has been very kind in sending some of his men to help me with my first few patients. After I had been down with him for several weeks I exercised a good deal of caution and have gotten several patients.

I have examined several patients in the first few clinics that came back for re-check to be sure I did not overlook anything since I have had a little more experience. It may turn out that I am not quite as proficient as I hope that I am. I certainly do not expect to pick out everything but I am following the policy of referring anything that is suspicious for an X-ray plate.

Dr. McCain: May I suggest one way the teachers react?

Chairman Norton: Yes.

Dr. McCain: I think it is part of the program to put out publicity before the clinics that a positive reaction in itself means that you should have the X-ray and that nobody needs to be excited until they have an X-ray. If the X-ray does not show anything they do not need to be worried about it. I think if these people know beforehand that that is true there wouldn't be very much excitement about it, and those that are found to be tubercular should be taken out of the schools.

Chairman Norton: Thank you, Dr. McCain. I think that is a very important point.

Dr. S. B. McPheeters (Goldsboro): I just wanted to say one word more on this question. I think that Dr. Richardson has done a thoroughly fine thing in going down three weeks, and think that others should do that. I remember several years ago being at Waynebrook and talking to Dr. Brad, who is the head of that institution, the distinguished physiologist, and he said that Cornell or some other school in New York State was sending its senior students up there for about three or four weeks. He said, "We believe in that time we can teach these men to recognize accurately ninety per cent of the cases presenting advanced lesions and a good part of those presenting minimal lesions."

You do not become an expert in that time. You use the fluoroscope but you do not learn the pathology. That is the thing you have to learn. If our health officers could recognize seventy-five per cent—suppose they did not obtain ninety per cent—and save that from going on it would be a tremendous advantage.

Chairman Norton: The next paper on the program is by Dr. Joseph A. Morris, Health Officer at Oxford, on "Health Education Responsibility and Opportunities in the Local Health Department."

Dr. Joseph A. Morris (Oxford): Health education is a big order and it is hard to encompass it in a paper that would be suitable to read. There is yet much to be said and I hope you will discuss the things that I do not touch upon because we had to limit ourselves in writing this paper and then cut out a good deal. I hope you will be sympathetic in your thinking of the paper for that reason. In some places the cutting out left a detached condition of what is left.

Dr. Morris then presented his prepared paper. (Applause.)

HEALTH EDUCATION RESPONSIBILITIES AND OPPORTUNITIES IN THE LOCAL HEALTH DEPARTMENT

J. A. Morris, M.D.
Oxford, N. C.

Everybody is glad that research is discovering the causes of sickness and that scientific remedies are scientifically applied for the relief of many diseases. But to the average observer it looks as if the more scientific the practice of medicine becomes the higher its cost. This ascent in accuracy and value is certainly a blessing to those in that economic tier able to pay for it. Alas, for those below.

Empiricism had some truth and virtue, but it was so difficult to make application of these to the numerous ill defined pathologies that we must acclaim the great advantage of today's costly practice over the old nebulous theories and practices. To initiate this change and to maintain it on its high plane of progress *logically necessitates* a higher cost of medical care. Tuition under those teachers competent to use the costly equipment for demonstration of the new truths must be continuously expensive in order to make progress. Medical students purpose to serve those needing service. To them there is just one course—to acquire the very best mental equipment possible in order not to be vanquished in the sick room or hospital by the legions of pathologies. Then the *physical* equipment necessary to make his costly *mental* equipment practically useful, steps up the total cost to approach a double. It is beyond the reach of the poor. If it is to be a luxury only for the rich to be delivered from sickness, what shall be done for the poor? For the poor *never to be sick* is the objective of health departments. This is the poor man's privilege and luxury, and the rich man's desire. But in human

experience the per capita sickness of the poor is very much greater than that of the rich.

"The poor *always* ye have with you," said the greatest teacher the world has had. Since sickness is so costly and the poor have nothing to pay, we have but the alternative of educating them to avoid the causes of sickness. Those who are *able* to pay for medical care and are *not ill* have a vital interest in keeping *every one else well.* Human diseases have their habitat in humans. Every infected person is in some measure a menace to the other part of the social body. To reduce that menace is best accomplished by health education. The poor outnumber the rich; and the uninfected poor, because of their poverty, usually have a greater pathogenic environment and less internal physiologic defense against these hostile forces, and thereby become fertile soil for endemics, epidemics, and pandemics.

Ignorance that cannot be sensitized to the danger of disregarding the causes of illness makes health education a Herculean task. There are three conditions which form a vicious triad—(1) Ignorance, (2) Poverty, and (3) Sickness. Any one of these will be supportive of the other two. The attack point on these for the local health department is on ignorance (not illiteracy)—to make manifest *what* is health knowledge; to live it; to teach it; to demonstrate it; to bring to the understanding of the one who gets sick his contributory negligence prior to his bad plight; to pointedly show the not yet sick *his* danger of contributory negligence leading to similar plight; to show the money value of a man; to convince the controllers of finances of the penny wisdom and pound foolishness of penuriousness in providing competent health education personnel. The skeptical may smile and carp at this latter, and rate it as not a part of a health education program. But no one is *skeptical* who has had enough experience to get a vision of the intricacy and immensity of the job; how *its concern* is to turn the tide of battle in the fierce contest involved in the biologic law of a "life for a life."

Another high hurdle to be cleared is *indifference* to mass suffering because it appears only in individuals so separated as not to be articulate in terms of heartaches, helplessness, and tragedy. This, *too,* is a part of a health education program.

There are four regular field workers in our local health department and this year we have had twenty weeks dental work in Oral Hygiene. This is only in consolidated schools. To this must be added, by the grace of Dr. G. M. Cooper of the State Board of Health, three months work with school children by a nurse he sent us. We have 28,720 people scattered over 550 odd square miles of territory. Our health education opportunities are modified by lack of concentration of population, but our sensitiveness to our responsibilities is not reduced. "The harvest truly is plenteous, but the laborers are few." We work in these units:

(1) Tuberculosis.

(2) Maternity and Infancy Hygiene.

(3) Venereal diseases (and other units).

(1) Tuberculosis. In Granville County the ten year's average number of deaths from tuberculosis is 18.8 according to reports and the ratio of colored to white is 4.5 colored to 1 white. One year, 1932, there was reported no white death, but 13 colored. The whites that die are preponderantly those on an economic level with the Negro. I have not seen one *Negro* recover from active tuberculosis, or that did not relapse after the short sanatorium treatment his funds may have purchased. As to home treatment I have seen nothing effective come of it. To the Negro in his economic dependency there comes no diagnosis early enough to give him a chance. The department of health, when it receives a report of tuberculosis, commonly receives a report of his death shortly afterwards. In such we have no opportunity as to that case, and our responsibility is limited to skin testing contacts left behind, and discussing with them the communicability of the disease, how to avoid it, who is most susceptible, how the positive reactors should live to avoid superinfection, and how to build up resistance to this unfortunate liability.

Diagnosis of early tuberculosis is not easy to the average doctor, limited to the history as he usually gets it, and to the use of his stethoscope. In early tuberculosis the X-ray of the chest reveals signs about as uncertain as the stethoscope except to the *trained* eye. Infected people are poor in most cases and do not feel able even to pay the X-ray costs, and thus no diagnosis is made, and no report until death enforces a report.

Our county has not any special bed for tuberculosis. We should have at the least estimate 36. Negroes suffer worst. They must continue to suffer until the menace of their poor, unkempt homes impresses landlords who furnish tenants as little as is asked. The tenant, because of ignorance of the evils of overcrowding and its deteriorating effects on standards physical, moral, and mental does not ask for much. He is thought to be satisfied, and perhaps he is; but I am persuaded that some one besides the tenant in such circumstances needs education and is responsible for the seeming satisfaction.

In teaching colored people about tuberculosis, we call their attention as tactfully as possible to their actual home conditions as seen on going into the home, their lack of personal hygiene of the body, clothing, bedding, insanitary surroundings, and in a friendly spirit ask a comparison with other better kept homes and people and a consideration of their lower sickness rate. Thus we try to arouse emulation of better things.

Education of both parties is needed—of the tenant to see that as a dependent his labor must in justice produce enough profit for the landlord to justify the outlay for better housing; of the landlord to recog-

nize the logic of increased production by sound bodies and happier, better thinking workers. These require in the landlord first an ethical concept of obligation to dependents, and *then* of the economic sequences. In the tenant also the ethical concept of giving value for value received. Both these must be effected before much can be expected in improvement in health conditions via better housing. Somebody has said that tuberculosis was a penalty imposed by biologic law for wrong living. The ramifications of responsibility for this reach beyond the victims and require the application of health education to *every contributor,* and these are from many angles.

(2) Maternity and Infancy Hygiene. Maternity has been compared with a spring, the issue from which is life and not water; but needing to be kept unpolluted even as a spring of water. Few mothers study physiology other than a textbook by that name. They know experimentally what happens in maternity, but of the origins of these and the dangers attendant few have even a *nebulous* idea of the way of escape from any of the pathologies. They cannot recognize these until they are so gross as to tax the physician's best thought and effort, and *then* issue in failure and grief and loss for the family, and lessening the power of the social body to reproduce itself.

Who shall teach motherhood? "Doctors?" But the pupils fail to go to the *school* except a small minority. Do doctors go to them unasked? Not much. That would be unethical. Unethical to whom? "To the profession?" The profession doesn't have babies; and it is to those who have babies to whom ethics should first pertain. Here is a real difficulty not to be passed up lightly. Ethical relations between fellow practicians is high, noble, and Christian until it smothers those same relations to a public dependent on them for protection in the hazards of motherhood. May I be pardoned for here making this suggestion to the profession. Local health departments have the same objectives in labors with the medical profession, i.e., to increase health and put off death. This being true, what is in the way of the coöperative efforts of the two factors—admittedly moving to the same ends, the coöperative effort to lead to *public conviction* that *motherhood* is the *purpose* of *home formation;* that home formation is the continuing reconstruction of the social body called our country; that the soundness of this process determines the soundness of this same social body and country.

Without violence to ethical relations among themselves they might with one voice demand that competent public health nurses be employed in sufficient numbers to serve every citizen-making mother as a guide, an interpreter of events, which to prenatals are only casual incidents, but which may terminate in *casualties* to motherhood. Not that these nurses shall take over accouchement which should be the province of the physician alone; and the parturient should be left to

determine who shall serve her. The public health nurses should understand that their relation to any prenatal is essentially a relation to her chosen physician. In other words, the nurse in that unit of her labor is the *private* nurse of the *parturient's chosen physician;* but in other work than teaching and guiding the case to professional hands, she is a *public health* nurse working under *that* factor of the coöperative effort to save motherhood. This is a friendly challenge to the profession to institute proceedings to compass the whole of the expectation of that public which is depending on them for safety. In 1847, the profession *so early* perceived that the field of labor with pathology was too broad to allow for physiology and preventive efforts, and so instituted preventive medicine or public health—this they did to accomplish that which they could not do and give themselves to suffering presented before them. There is today an *extension* of the *need recognized* in 1847. There is *much more suffering* than they can *possibly attend to,* and it has grown to distressing proportions because it is left in the *untaught* hands of those who are to *suffer,* to escape it as best they can, or succumb. There are now too few nurses to bring this needed guidance to all expectant mothers.

(3) Venereal Diseases. Whatever civilization has built up syphilis is blighting. With termite secrecy it has worked its havoc in the social foundation. The honest analyst of our present social structure cannot accurately measure its debilitating effects on any single generation. We know it comes, but does not go. It abides in two generations as an active degenerator. Death and the doctor are the two effective forces pitted against further inroads.

Evolution is a biologic law. Syphilis is an involutionist. It is effective against evolution, we know not for *how* many generations. Let the syphilitic father and mother contemplate their life line extended by children and children's children on down the generations. The first generation often exhibits stigmata. This generation only rarely transmits to the next or second generation in demonstrable treponemic degree. These usually pass as not syphilitic because the treponema goes no further down; but its involution forces have beaten back more than the gain of evolution in an equal or greater stretch of time in the forebears. It cannot be told how many of those called degenerates in our day come to us out of the life line of genes degenerated within the first two active generations of the treponema cycle in forebears whose life history is sealed up. Someone has called the treponema's work the great imitator. Because we cannot demonstrate the presence of the treponema after the second generation is questionable evidence that the force of it does not continue. It may be (or it may not be) that the things imitated may be a distal section of that great imitator itself. (More light to the genealogist.)

These first two generations of the treponema become the concern of our day. We have a dual condition present, i.e., *infected poor* people, which demands that all plan together, and all work together.

We have said that the most effective agents against the spread of syphilis are death and the comprehending doctor. Death is doing a *fearful* part in the first year of life and even beyond to limit *living* syphilis.

The writer has been called "syphilis minded." So be it; for by the practice of so-called syphilis mindedness he has taken blood specimens for serologic reactions that revealed syphilis otherwise concealed. He is convinced that faithfulness to the body social demands that serological reactions shall be a routine practice of the private practician for the benefit of his *service* to the *patient* and the *public* just exactly as does the hospital interne, who dreads to be vanquished in a fight with pathology of any sort by such a possible hidden foe as syphilis.

Everybody should be syphilis minded in the degree that would make them think sanely for self-protection, and even lead discovered victims to a course of safety for all not to be had but by well directed treatment.

Our department takes time to explain to every patient the relentlessness of untreated syphilis; and, as a reason for making the blood test even in those who *show no outward sign,* we teach the "sit down," sneaking nature of syphilis.

The ignorance of the indigent infected is pathetic. Let the chancre heal and all is well with most of them. They do not think they could have a disease so terrible as *not to be mentioned* if they see nothing and nobody else knows any better. Just how much good education effort is going to do only a long continued fight can reveal. This we know by experience, that a large per cent of primary and secondary cases of syphilis seem to deny the dreadful things said of syphilis. To the patient they do not foretell the *plagues* of tertiary syphilis. A case of secondary keratitis is *more effectively instructive* to the average ignorant person than *many repetitions* of future possibilities.

The reason more of it is not made safe to be free at large is that the patient controls the extent of treatment; and yet a number of patients have told me that physicians have said to them they have had enough treatment when they have had less than twelve doses. We of our department instruct every case coming to us, and then send them with a reference card to a doctor. We have an understanding with our doctors that we do not wish to treat any case, if they will do it, and challenge them to send patients back to us when they are no longer profitable to them, and if the patient was not able to pay for at least 20 doses of arsenic and 30 to 40 doses of bismuth. Such an agreement is proposed on an epidemiological basis. Our department teaches indigent patients and all the public — *and county commissioners* that treatment must extend beyond *epidemiologic* requirements if the patients wish to be certain not

to be "down and outs" as age advances. We "back stay" this statement by referring the commissioners to the costs already accumulated at the county home by syphilitic derelicts there. The instruction of the public includes the necessity that they do not dismiss a syphilitic from his job, but have the case treated as their measure of coöperation with the department. They are made to sense the fact that the one they may instate in the place of the dismissed might by the easy, stealthy way syphilis gets around get to each succeeding employee in his industry or whatever the service might be.

Summary:

1. People are sick and do not know why. Experience is about the limit of their knowledge of it. Doctors are too busy with relief work to take time and patience to give instruction as intensive as it must be to be effective. The department sees opportunity, and to the extent of the personnel's ability assumes responsibility for teaching the origin of illness and the ways of escape to all concerned.

2. Poor people are loved of God, and we are happy to labor for people of this standing, and are *conscious* that it is with *doctors* as with *all* receiving the eternal decree, "In the sweat of thy face shalt thou eat bread."

3. Syphilis is become a *danger* and *burden* to all. All must share the burden of its control.

Chairman Norton: I am sure we have all obtained a good deal from Dr. Morris' excellent paper. It has a background of twenty-eight years of private practice and nineteen years of public health work. We gather a whole lot of philosophy and a whole lot of information from it that ought to be passed on to the rest during this time. We thoroughly enjoyed it, Dr. Morris.

Another paper on this program is so closely related to this paper that I make no apology for calling on Dr.MacNider for his paper. Then we will discuss the two papers together. This is the Section on Public Health Education and I know all of us feel that health education of the private practitioner, of the health officer, and of the general public is of extreme importance. Dr. MacNider's subject is, "Importance of Continuing Plan of Medical Training."

IMPORTANCE OF CONTINUING PLAN OF MEDICAL TRAINING

Wm. deB. MacNider, M.D.
Chapel Hill, N. C.

Mr. Chairman, and Gentlemen of the Section: It is extremely civil of the Chairman to permit me not to read a paper. I do not feel competent to read a paper before this group of specially informed people

about public health, because public health as a specialty is out of my domain.

We have always been greatly interested in public health at the University. As you know, we have been extremely fortunate in past years in having the interest, activity and guidance of Dr. Rosenau, and he has helped us to establish that wonderful department of the Medical School at the University, the Division of Public Health.

At the present time, this Division of Public Health is offering what are generally termed short courses for people who are public health officers, county officers, municipal health officers, sanitarians, and others. I think it is going to be of extremely great value to a group of people not confined to North Carolina but confined to this southeastern division, that the Federal Government has created, to offer at the University of North Carolina this type of instruction. This division commences in Delaware and goes through the southeastern states, including the State of Florida, so that we have at the University a group of individuals, physicians, interested specifically in public health, who have come in there to continue their study.

I always felt that there was only one type of physician who was worth while, that being the student physician. The only public health official who is really worth while is the individual who realizes that public health is a progressive thing, that it is expanding rapidly in different directions as a result of newly acquired information. In order that a public health official may be effective he must not only be a student physician, which is the basis of his intellectual life, but in addition he must be a student public health officer.

It is the hope of the Division of Public Health at the University of North Carolina that after these short courses have served their purpose —namely, to furnish an adequate number of fairly well trained public health officials for counties and municipalities in this southeastern division, that then the Division of Public Health can operate in the capacity of a school of public health and offer appropriate help in public health work. That would include the Master's Degree, a mark of science and public health, and later the Doctorate in public health.

Those plans are now being considered and are in the process of development at the University. I wanted this group to feel how keenly interested we are in this basic endeavor to make life happier and to make life more effective in the various age periods in which life has to be considered. I think the question of age periods is an interesting and an important one. We can simply divide the life span of an individual into four age periods. In those age periods individuals are susceptible or they are non-susceptible to various diseases, and they are susceptible or non-susceptible to something which for lack of a better word we might call the plane of living at those age periods.

I don't know whether or not public health experts such as you have

thought of public health endeavor in terms of age groupings. Pediatrics as advanced in this state, first by the activity of a physician now known as Dr. Charles Robinson of Greensboro, by Sidbury of Wilmington, by Root, and more recently by many others, has considered the age period of infancy, both in terms of the prevention of disease and in the terms of the cure of disease.

I feel very certain that there is just as much reason for public health officials and physicians, especially, to consider three other age periods as the first, and the way those age periods reflect themselves in susceptibility or lack of susceptibility toward disease. The second age period, in my estimation, will be the age of puberty as it registers itself in the male, but especially as it registers itself in the female.

My feeling is that the physical life of young people at this age is virtually entirely neglected, and that many of the major psychiatric accidents which develop later in life are due to a faulty appreciation as to what is going on in the minds of these individuals, not only of a sexual character, but of other characters. We do not set the puberty period aside to give guidance and direction to individuals at that stage of the life scheme. From a psychical point of view I am very certain it is of extreme importance. I have always felt that way.

My attention was called to this by a child in the village in which I live. She was a young girl of fifteen who was very esthetic, artistic and lovely. She was about the most unhappy individual I have even known. A psychiatrist would perhaps have pronounced her a melancholic or given it a more difficult name than that, which I feel very likely means nothing but a name.

No one had taken the time to talk with this child, to investigate the condition or conditions which, at her stage of the life process, were upsetting her. She was sent by her father to a medical clinic in a northern city which cost him over a thousand dollars. She came back with a diagnosis, after having seen eighteen different people, that she had a goiter and would likely have to be operated upon. Anybody who looked at her knew that she had a goiter, and if they had any sense they knew she would not have to be operated on, and they would not have thought of telling her that she did have a goiter and would have to be operated upon. Her condition was very much aggravated from the state she was in when she left.

I knew her fairly intimately so I could talk to her freely. She had a physical analysis of her condition and she was an unhappy human being, unrelated to everything that made up her life. After a considerable amount of talk I found out that her trouble was due to the fact that she didn't think people liked her, that she didn't think boys liked her. No boy had ever called on her and she was extremely unhappy as a result of that. That sounds foolish but it was a terribly real situation with her.

The child's psychical life at this stage of her life process had not been studied sympathetically by an understanding human being but had been physically analyzed in an attempt to card-index the thought that was going on in her mind.

I arranged to have several boys call on her and to have some flowers sent her. This cured her. I don't know the status—perhaps Dr. Griffin does—of her brain that would respond in that fashion to this type of treatment. My belief is that at the period of puberty there are many young people, mostly young girls, who are obsessed permanently by not being properly guided and considered at that stage of their life.

The third period in the life span strikes me as of extreme interest and deserves the attention of public health officials. It is the middle-age group, especially the middle-age group in the male. There is a great prevalence of heart disease, blood vessel diseases, primary ailments or secondary diseases, renal diseases which are certainly worth while considering.

What is it that occurs during the middle-age period in our life which expresses itself in such a clean-cut, deadly fashion? We should try to find out how individuals can be guided through the middle-age period with a greater degree of safety. That, perhaps, rests more upon the physician than the public health official. We should know something about the heredity, the status of the heart, the ability to withstand strain, so that an individual at the middle-age period can live according to the conditions of his time. That strikes me as important.

The fourth age period is the senile period. I made the statement some thirty years ago that there was just as much reason for considering senility as a specialty as there was of considering infancy and childhood a specialty, and I still feel that that is true. We simply expect old age, even young old age, at sixty or sixty-three as a certainty and pass it up without attempting to institute measures to make the oncoming years both effective years and happy years.

My feeling is that if we, as physicians and public health officials, would not pick out entities in the life span, but consider the life span in terms of definite age groupings, infancy and childhood, the age of puberty, the middle-age group and the senile group, that perhaps we could do a considerable amount to increase the length of life, to prevent death, and certainly bring about in those age periods a great deal more happiness than frequently exists at that period.

I am very much obliged to you for letting me make this statement. (Applause.)

Chairman Norton: Thank you very much. I would like to call on Dr. Paul Ringer to open the discussion.

Dr. Paul H. Ringer (Asheville): Mr. Chairman, Members of the Section: This very delightful talk of Dr. MacNider is not an easy one

to reply to extemporaneously. The title is somewhat misleading. I did not know what he was going to say. He started off by speaking of the public health work at the University of North Carolina. Then he branched off into a delightfully psycho-philosophical discussion of things in general and nothing in particular. The way in which he presented the subject and the way in which he unrolled it made it very fascinating to listen to but very difficult to amplify.

I was quite taken with Dr. MacNider's division of our sojourn here into the life spans. The instance of the girl he cited reminded me of some parts of Dr. Strecker's talk this morning and his reference to the senile group reminded me very much of a clinical pathological conference I attended in Charlotte some months ago when Dr. Pepper and Dr. Baldwin Lupe came down from Philadelphia. I remember Dr. Pepper saying that the way things were going the life expectancy was being constantly increased. Preventive medicine having its great field in infancy and childhood, it might seem that such a specialty as Pediatrics was on the wane, and in contra-distinction the specialty that belongs at the other end of life was in the ascendency. That may be so.

To come back to the title of Dr. MacNider's paper, "Importance of Continuing Plan of Medical Training," I think we all feel that it is very important indeed. It is evidenced by the fact that all over the country there is post graduate course after post graduate course, and while in the past many doctors always studied, now more of them are studying and the general plan is made more easy, and men are able to get what they want with far less effort than they did in the years gone by.

I think a doctor should also keep up his studies in other things. I think a busy practitioner is so apt to get on a single track, the track of the practice of medicine. I don't know why it is and I cannot state the way it works, but I do know the more a man knows about things other than medicine, the more cultured he is, whether it is in a literary or artistic or philosophical line, the better doctor he becomes, and the more he will understand his patients, and the greater insight he will have into the labyrinth of our minds and souls and spirits. In that way he will be better able to influence those with whom his practice brings him into contact.

I want to thank Dr. MacNider very much for the delightful talk he has given us and I must apologize for not making a more adequate discussion. (Applause.)

Chairman Norton: We will now hear from Dr. Thomas G. Faison, Health Officer in Hertford County.

Dr. Thomas G. Faison (Winton): I have been asked to discuss Dr. Morris's delightful paper on "Health Education Responsibilities and Opportunities in the Local Health Department." As he said, our responsibilities are great because if we don't educate the public we lose

our jobs for that is what our jobs are, chiefly education. Our opportunities are so numerous that we cannot begin to talk about them all.

I enjoyed his very able paper and also agreed with him. I would like to run over shortly some means of education. We have to start with an entire group, start with the doctors and come on down through the county commissioners, the farm owners, the tenants, and finally, those who come to our clinics. That is necessary to complete the picture.

The question was asked about the teachers. Yesterday in Dr. Moore's talk about rabies the questions that were asked all went back to the education of the public. We recently had a tuberculosis clinic in my county. Knowing how touchy teachers are, I talked to them all and told them about this little thing as to what tuberculin tests are and what they mean, and we gave them wide publicity in the paper saying that a positive tuberculin test did not mean anything. We also helped them out by saying that I had a positive tuberculin test and then they felt a little better as I am not a particularly puny looking individual.

A robust teacher cannot understand why she has a positive test. That is education. How to control rabies lies entirely, in my opinion, in the education of the public.

Unfortunately, for us health workers the American public sees only one thing, the dollar sign. In our education of the public it is absolutely essential that we stick the dollar sign on it or we cannot talk the language of the American public. We are not talking up their alley. In talking to a farm owner we have got to talk economics to him. In talking to a mechanic we have got to talk economics again. In anything we try to sell we have got to stick a dollar sign on it or they will turn a deaf ear.

Dr. Rosenau told us last year that one of his students told him the automobile was the chief factor in disease. I think ignorance is a chief factor in disease. Ignorance is the cause of more disease and germs than anything else. Of course, the germs play their part but ignorance plays its part.

In all of the talks we heard yesterday and that we have heard today everyone of them said that education is necessary, and it is important to educate the public. I am sorry that I cannot tell you how to educate the public. We go out and make talks and think they sound pretty good and then they back-fire on us. I was in there this morning when Dr. Strecker was talking. There were two doctors sitting right close to me and one of them said to the other, "Ain't that a lot of hooey?" That is the kind of difficulty that we run into.

We often talk to women's clubs and hear them make much the same statements. As a means of dissemination of education today the radio plays an important part. In my county we do not have any receiving sets so that is out. The exhibit, in my opinion, is a very important item of health education. When I say exhibit I mean charts, diagrams,

bar diagrams, dummies and beds. These are a means of making some visible impression on a patient and on the public.

Right in front of the chair in which I treat syphilitics in my office, I have a big sign printed, "Syphilis kills twenty per cent of those who die in Hertford County under the age of sixty." I leave that stuff on the wall. Bar diagrams are important in telling the public of our work as to the increase of disease and of death rates.

Unfortunately, I am not a Chautaugua speaker, The old idea of Chautauqua is passing. People will not acknowledge it. You cannot sit and listen to a talker any more. If you try and tell them one little thing it passes, as they do not listen. Pamphlets are distributed by the various boards of health and organizations. Some people read them and some people throw them in the trash heap. News articles in the local newspapers, in my opinion, are very important, but here again you must be careful about what you say. You cannot forget the dollar sign ever. Slides along with speeches give people a little picture. Correspondence helps. Personal letters to leaders in a community, manufacturers and farm owners, also help. The last typhoid clinic I had I wrote all the large farmers personal letters requesting them and telling them of the economic importance of their tenants not having typhoid fever and asking their help in getting their tenants to be vaccinated in the vaccination centers.

I think we should have a library in connection with health departments to loan people books about health subjects which we have preciously rated. Bulletins do their part. Contests, such as blue ribbon babies and nine-point contests and giving badges and prizes, also help. I personally don't like them but they are a means of creating interest and teaching health. Out-door advertising is being used on a large scale in our anti-syphilis campaign. Baby parades and house parades and floats are used. Movies are important as a method of disseminating health information. I am very much interested in this and I have a projector and I run around taking pictures of everything I see. It is important to give some local color to these movies. Those that you can rent or borrow have no local color and are not so interesting, and the people go to sleep on you. However, when you show them their own little kiddies up there at the school being examined it means something to them.

A most important way of disseminating health information and the last on this list is personal contact. Every time anybody sees you, looks at you or hears you talk you have an opportunity and responsibility of giving health education. I think that is more important than we all can realize. We can write a thousand letters and make a thousand speeches and do a thousand other things, but sometimes personal contact with an individual will educate him much better. So I think that is very important.

I like positive health education. Personally, I take great pleasure in going into a drinking stand and hollering for a paper cup. I think that is the best way of getting over this idea of drinking only out of paper cups.

I think posture is an important factor.

The first thing I did when I got to a certain place was to try to make a speech to the white school teachers, with a nice sister sitting in the front row grinning, with her mouth wide open and showing a first-class case of pyorrhea, with nice green pus running between her teeth. She was no fit subject to be in a school teaching children. She could not tell a child to brush her teeth and get her to do it.

I enjoyed Dr. Morris's paper very much and appreciate this opportunity of discussing it.

Chairman Norton: Thank you, Dr. Faison. (Applause.)

I feel that this idea of continuing instruction of the medical group and of all public health workers closely ties the public together.

We should be glad to hear some further discussion along this general line.

Dr. John Williams (Asheville): There is but one thing that Dr. Faison left out that I think he should have mentioned and, in my opinion, it is the most important. I believe in order to educate the public we should get the best assistance possible such as having a state board of education put courses into the colleges that these teachers could take, and then scatter them throughout the length and breadth of this state, and let them teach health just as they teach mathematics.

They could go from one schoolroom to another and one school to the other, and make it a course just like any other course that is taught, such as music or mechanical drawing or any of these things. I hope that I will live to see the day when our school teachers are made competent so that they can assist the health officers. For the last two years I have conducted a course every day for an hour throughout the normal training schools for teachers, and I teach them all I can in my humble way. I am no teacher and I am not competent but I have done the best I could. I believe when those teachers go back to their schools in their several states that they will be of great assistance to the public health officers of their communities. Thank you.

Chairman Norton: Thank you, Dr. Williams. I would be glad to hear from someone else.

Dr. A. H. Elliott (Wilmington): I would like to mention one very small feature of this public health education that we have received some encouragement from. That is the fact it reaches only a limited number, but we do feel as though it makes some impression on those reached. For some time when we made any kind of a survey, especially for hookworm or malaria, and the results of that survey have been obtained and reported to the individual, we put it on a mimeograph form, that indi-

vidual report, and in addition to that we put a summary of the research with it. Then we try to write in terms that can be understood by people that cannot even read and write the procedure, and how hookworm or malaria or typhoid are transmitted.

In other words, we try to take advantage of the fact that they are then in a receptive mood, and the fact that they have contributed a specimen should make them interested in the results of that survey, and in the public health means of preventing that disease.

We also do the thing very much along the same line in trying to take advantage of the fact a burned child dreads the fire. We have had for many years a course in typhoid inoculations, and even though most of our people live within the city limits or in either end of the town it is made up almost entirely of the poor, ignorant people. You may have clinics for immunization at the courthouse from now on, and you may have practically no attendance. However, every time we have a case of typhoid fever, for instance, among these ignorant, indifferent and unconcerned groups, we start a small immunization clinic in that home or in that immediate locality. At least, when they are down we feel that they are kind of interested in finding out something about how they got there.

Chairman Norton: Thank you, Dr. Elliott.

Dr. L. L. Parks (Tarboro): There is one phase of health education that I don't believe anybody has mentioned, and that is, taking advantage of these various health weeks, particularly of Negro health week. In one county we have sixty per cent colored population and forty-five per cent colored population in another county. It seems to me we have gotten some encouragement in having Negro health week in trying to teach the various colored teachers to submit some sort of a poster on health.

Last week every colored school in the county sent in a poster of some kind or other. We tried to get each school to make as many posters as they could. Then we have a teacher select the best poster. It so happened this year that we observed it again, and every colored school sent in a poster of some kind or other.

We also might mention that Edgecombe happened to get one of the first prizes last year in the whole United States, so we have taken a little more interest in it. I think it teaches the children something, and I believe it is something we can put over such as the problems on nutrition and some of the things we need to work on. Thank you.

Chairman Norton: Thank you, Dr. Parks.

Dr. J. M. Barrett (Greenville): This is a very dear subject to me. I will say just a word in seconding Dr. Williams' remarks. It is very easy for us as health workers to get over health education to the middle, and especially to the upper strata of whites, but it is almost impossible

for us to get health education over to the lower strata and to the Negro population. For that reason we must adopt a method used by the State Department of Education in teaching children. The upper strata of life does not need our public school system. Those children are taught at home or can be taught at home, but our state leaders, knowing that the population of this country in years to come is going to be made up of the lower strata of life, are trying to educate that lower strata of life along with the upper strata.

On the same principle we must teach health education to that lower strata. We cannot get them by the usual methods. There have been some excellent methods mentioned here this afternoon, but the best way to get health education into the lower strata of our population is to teach it in our schools.

I just want to emphasize that thought. If we want a health-minded population tomorrow we must teach it to the children today, and if our school teachers are taught health education so that they can pass it on to their pupils we will attain this objective in the future.

Chairman Norton: Thank you, Dr. Barrett.

One of the reasons that I particularly wanted Dr. MacNider to discuss this problem with us was because, in getting in touch with those who are doing health education work, it has been an observation of mine —I don't know whether any of the rest of you have felt the same way or not—that one of the big handicaps in getting across health education has been that small group of physicians who don't keep themselves educated. That is why he was asked to give a paper on the importance of continuing medical training. That is a real problem. Physicians who since they graduated from medical school have not read magazines, have not attended meetings, have not been interested in the progress that has been made since that time, and are not interested in the recently emphasized health education of the public are the people we are talking about.

It is one of the big drawbacks of our health education program, and I would like to emphasize the importance of all the things that have been mentioned, particularly the education of teachers. There are about 23,000 of those in the state, and there are about four hundred some odd public health workers in the state. There are a large number there that we can work through and that we need to use.

Dr. William deB. MacNider (Chapel Hill): May I just throw out a hint? It is going to take a long time to get these teachers in these schools, but I believe that if the State Board of Health can make some arrangement with the Department of Education in Asheville, the city of Asheville, that for a week before school begins or after school closes, that they would require and pay for these teachers to attend sessions every day it would be a great help.

We have got some brilliant doctors in Asheville and they could help. We haven't got to make doctors out of those teachers. We can just tell them some things that will help us in any program, and I believe while we are waiting for this broader educational program to take hold that we health officers, in our several counties, could have these institutes where the teachers could attend and be paid for attending. They would take notes on lectures and we would have things printed for them and everything else so they could help us next year. At least, we would get acquainted and they would know a whole lot of things about our phase of work that they do not know now.

Chairman Norton: That is a mighty good suggestion. Is there any further discussion? Dr. Morris, do you have anything else that you would like to say?

Dr. J. A. Morris (Oxford): Mr. Chairman, education means more than the sound of that word because when you come to put it into operation you find problems piling up on problems. We are willing to subscribe to everything that has been said in the discussion of health education. We think just the same way as you do here. For instance, Dr. Williams introduced the thought of general teacher training, that they might appear in the schools and like a mighty flood have health education overspread our land.

You mention some of these comparative numbers, and the disparity between the health teachers and the public school teachers. I count myself a failure in any effort at teaching until I have succeeded in doing this. First, I want to get the concept into the person. By the way, Dr. Faison put forward the idea of personal contact. I believe that that is worth very much more, Dr. Faison, than mass teaching. When you go to a clinic and are placed on the program you are tolerated but that is all. The people do not listen to you. If they do they have no interest in what you are saying, but they may have interest in you as a person. If that is to be the nature of health education it has not put the thing over. You have not educated people until they have the concept of the purpose of the whole situation, and then the motive. There must be a motive, and these teachers in the schools, until they can be taught to perceive the motive, are inadequately equipped. They are already learning the concept but it doesn't result in very much.

They can recite their lessons but it doesn't change the bad appearance that the pupils around the school tolerate. They have got to have the whole concept. Apply this and get a result that will come into life, and that is my difficulty.

Our friend over here said, "It is going to be a long time." It is going to be precept upon precept, line upon line, here a little and there a little, and that thing over and over and over, because you cannot get into the "nigger" mind the concept, the very first step. He has more emotion than

he has mind and if you can get it thoroughly in his mind, I believe the Negro will go further than the white man will because of that very nature.

If you will think about what those two words mean, educate and emotion, it will help. "Motus" is the basis of the word emotion. It means, "I move." Until I can get a person to move I feel as though I have not educated him. The concept is insufficient. He has got to have the emotion, the feeling that is necessary and proper and then the will comes.

I am very much obliged to everyone who has helped in this subject.

Chairman Norton: Time is getting along. Dr. E. S. King has submitted a discussion of Dr. Morris' paper, which will be included in the minutes.

The following discussion was submitted by Dr. E. S. King of Wake Forest:

The responsibility of the Public Health workers is great, and likewise their opportunity for service to suffering humanity is without bounds. They have discharged this duty well. Theirs is a great and interesting field, and as a reward for their labors we have seen the morbidity and mortality rate of many diseases topple from high proportions to comparatively low levels. Their work plus other added influences has increased the span of life about ten or more years. There is no fault to be found with the way in which they have applied scientific discoveries and sound medical principles in the prevention of disease and the promotion of health. They are always eager to learn of and apply good, sound, tested medical discoveries.

The practicing medical profession has also nobly contributed a very important part to our advancement and success in the Public Health field, but they as a group have to be concerned with making a living, and I hasten to ask the question, in some instances have they kept the pace? It requires a great deal of effort to see to it that the lower economic half of our population, which Dr. Morris described, is properly cared for medically. I recently heard from an authoritative source that one out of every three persons in our country was poorly cared for medically. They are poor and indigent and may fail to get what the upper half or better class gets.

Preventive medicine, to my mind, is one of the fastest growing branches of medical science today. It has long been recognized that it is better to prevent disease than to try to cure it. This doesn't mean that if we could prevent every disease that we medical men would not have anything to do, because every life saved is one more person to consult his Doctor from time to time concerning his health.

We have tremendous accomplishments to be proud of. Many diseases have been almost abolished or greatly reduced as a result of the timely use of some measure known to be certain in its preventive results. We

can with pride point to a long list of diseases, which once were looked upon with great fear and dread and which are now only occasionally thought of. In this list we like to think of smallpox, diphtheria, typhoid fever, and tuberculosis.

Yet, with these good results are we to be satisfied and sit down? Most certainly not, for in this very group of diseases the problem has not yet been fully solved. Last year we had 2,056 cases of diphtheria, 493 cases of typhoid fever, and 19 cases of smallpox reported to the State Board of Health in this state. There should not have been a single case of either.

In this day and age of enlightenment isn't this a situation to be ashamed of? Especially so when there are immunizing products that will surely and certainly prevent them. It is only by pushing health education opportunities further out to the masses that we can hope for any greater degree of success in this direction.

Dr. Morris pointed out the three great difficultly surmountable obstacles to any program; namely, ignorance, poverty, and neglect. Could we get rid of these we could truly say,"The end of a perfect day." These three factors, but especially poverty, are not only playing a great part in the causation of our acute communicable diseases, but are largely, if not solely, responsible for our deficiency diseases. Therefore their ill effects may be twofold. One out of three go to bed hungry at night.

This economic situation which positively affects the health of thousands of our population seems, however, beyond the power of the medical profession to correct. In order to further benefit from health education could we not teach in every graded or high school in the state an elementary course dealing with the more common diseases, with emphasis on their nature, method of transmission and prevention. Could not this course be taught by some local physician or health officer who because of his knowledge of the circumstances could place emphasis on those points needing emphasizing. Successfully controlling any disease unquestionably depends on educating the public, and to this end two special drives are now under way, as you know. One against syphilis and the other against cancer.

We have another growing list of diseases concerning the control of which we are beginning to see some light. Among these may be mentioned measles, whooping cough, pneumonia, and poliomyelitis. Convalescent serum or placental extract given during the first five days after exposure to measles will prevent, and if given between the fifth and ninth days it will modify it. The use of the undissociated, smooth, phase 1 organism in making the whooping cough vaccine within the last few years seems to give better preventive results against that disease. No successful active vaccination against pneumonia has been discovered; however, experiments were under way during the past winter in some of the CCC camps. Unquestionably the specific serum is efficacious in the treatment of

certain bacterial types of pneumonia, and poliomyelitis convalescent serum may prevent against that disease.

One other point not touched upon and that is what are we to do about the growing list of men dying during and before middle life? We are very frequently hearing, and it seems more frequent than ever before, of men dying ofttimes suddenly while in the prime of life and in most instances under fifty years of age.

Dr. Morris has sounded several key-notes and may I in closing enumerate three of them:

1. Who is to take care of the indigent?
2. A needed consciousness of the magnitude of Public Health work.
3. A need for more help both physical and human.

Chairman Norton: Dr. Symington says he has a patient here who has yaws, whom he wishes to bring in. It will take only a few minutes to show this patient to you. I have not seen him myself.

Dr. John Symington (Carthage): This is another accidental discovery. Clinically, the diagnosis has to be made between Congo floor maggots, yaws and rupia. It is a case of rupia.

Formerly considered malignant, the modern treatment of bismuth and neorsphenamine is working like a miracle. The Wassermann test was plus four.

Probably over 95 per cent of the medical doctors of North Carolina have never seen a case, as this form of syphilis is rare in North Carolina. Dr. Wilcox, the nearest practitioner to the patient, has undertaken to treat the case until he can return to our clinic.

Chairman Norton: Thank you very much, Dr. Symington. The last paper on the program for this afternoon and one which I consider on a most important subject that we will discuss, and which I do not believe has been discussed before this section in some time, is a paper by Dr. R. B. McKnight of Charlotte on "Appendicitis; a Problem for Official Public Health Agencies as well as for the Internist and Surgeon."

Dr. McKnight presented his prepared paper.

APPENDICITIS: A PROBLEM FOR PUBLIC HEALTH AGENCIES AS WELL AS FOR PRACTICING PHYSICIANS

R. B. McKnight, M.D.
Charlotte, N. C.

"Every twenty-six minutes someone in the United States dies of appendicitis. Laxatives and delays in entering the hospital are responsible for 18,000 of the 20,000 appendicitis deaths occurring each year in this country. The knowledge of how practically to wipe out appendicitis deaths by 1943 is established. Its application is simple. What are we going to do about it?" This quotation is taken from an article

in *Hygeia* in 1934 when the mortality was 14.3 per 100,000 population of the United States. The last available figure, confirmed by telegram from the Army Medical Library, is for 1936 when the mortality was 12.8 per 100,000—still alarmingly high. These figures are disconcerting when it dawns upon us that about 90 per cent of those who have died could have been living today.

According to the Mortality Statistics of the Bureau of the Census, there were in 1934, 332 deaths from appendicitis in the State of North Carolina. In the same year in 110 Duke Endowment supported hospitals in the two Carolinas there were reported 258 such deaths. If one will carefully analyze these figures, taking into consideration other facts and factors and other reported causes of death, he will probably come to the conclusion that they are entirely too low. I have accumulated some evidence which will be elaborated upon considerably, investigated further and published in a subsequent report, that will likely show that the actual death rate in the two Carolinas is probably higher than we think it is—certainly among those who are most prone to have appendicitis. Taking, however, the Bureau of Census figure of 332 deaths in one year in our state, for that presumably includes all the hospitals, what does such a figure imply? Does it simply mean that 332 persons have died and that gives us a lower mortality rate than for the country at large? Does it give us the excuse to pat ourselves on the back and complacently say "what a nice low death rate we have"?

As I see it it implies two very important and significant considerations. (1) It means that fathers, mothers, relatives, and friends of 332 persons have experienced the loss of loved ones and have in their hearts a void that can never, never be filled. It means that the tears are all the more bitter when the sad truth is revealed that "it should not have been." It means a tremendous loss of life and the grief that goes with it. (2) It is a great economic loss to the state. Let us see if this statement can be translated into terms of dollars and cents—something we can all understand. Assume that the average stay in the hospital is ten days; this represents an outlay of about $13,500.00 based on a minimum rate of $4.00 a day. Insurance companies are far from philanthropic institutions—they are hard-boiled business concerns, and necessarily so; on an impartial basis they have estimated the value of the average human life as worth $5,000.00. This makes a total cost to the State of North Carolina of approximately $1,675,000.00 in one year—the cost of purgation and procrastination! This also means that appendicitis deaths are costing the people of North Carolina nearly $200.00 each hour the year around. Nor do these figures include many incidentals attending the costs of a death, which if included, would run this figure considerably higher. In the United States there is an annual loss of over $100,000,000.00, approximately 90 per cent of which could be, and should be, saved. These, gentlemen, are terms we can all understand!

As a result of Bower's noteworthy work in the city of Philadelphia, it is computed that a cash investment of less than $10,000.00 over a period of four years, was made to yield over $1,400,000.00, based on the above figures. This is a return of over $140.00 for each dollar spent. As a result of this campaign in Philadelphia against their one-time alarmingly high death rate from appendicitis, a person stricken with this disease in that city today has from 25 to 75 per cent less chance of dying than in other large cities of the United States.

The mortality rate in the United States as a whole is 70 per cent higher than in Germany, over 100 per cent higher than in England and more than 300 per cent higher than in Italy. These statistics, of course, are subject to critical analysis, but the fact remains, the United States does have a much higher death rate.

Medicine does not have to guess at the reasons for approximately 20,000 annual deaths from appendicitis in this country—medicine knows them! These causes may be divided into two general groups: (1) Those over which the practicing physicians have much control, and (2) those over which the practicing physicians have a limited control. In the first group may be mentioned mistaken diagnoses, inefficient surgery, and improper treatment. It has been fairly definitely proven that this group comprises about 10 per cent, or even less, of the total deaths. As to mistaken diagnoses, one can truthfully say there are some cases, particularly the atypical ones, that defy our keenest diagnostic acumen and at times the best of us will fail. Appendicitis is frequently one of the most difficult intra-abdominal diagnoses to make. However, with appendicitis always in mind, a policy of careful observation of the patient, giving him the benefit of any doubt, will reduce these cases to an irreducible minimum. The question of inefficient surgery undoubtedly does account for some deaths, I regret to say. This is a problem that could be controlled by the doctors themselves, if they would only exercise the courage to do so. Regarding the question of improper treatment, we must admit that the doctor is sometimes at fault. The treatment is sure and clear-cut. No patient has ever been cured of appendicitis by "freezing it out." I know of no available statistics dealing with this group and I doubt if such could be obtained.

It is the second group of causes with which we are especially concerned, for it is here that the real work can be done to bring about the desired reduction in deaths. Purgation and procrastination account for 90 per cent, or over, of the deaths from appendicitis—an accepted statement based upon fact. Generally speaking, the doctor has little control over those who run for the castor oil bottle when little Johnny has "a pain in his stomach," and too frequently he is called only when the oil has not relieved the patient, or when the pain has become unbearable—or, what is worse, has stopped and then started up again! What does delay in operation as expressed in terms of the Philadelphia survey,

show? (There is no reason to believe that the ratio of the following figures would be greatly changed in any other community.)

Of 4,756 patients admitted to the hospital within 24 hours, 1 in 49 died.

Of 5,351 patients admitted to the hospital within 48 hours, 1 in 21 died.

Of 2,094 patients admitted to the hospital within 72 hours, 1 in 16 died.

Of 2,703 patients admitted to the hospital after 72 hours, 1 in 11 died.

In regard to the use of laxatives in that group where a history of laxatives could be obtained, we find the following:

Of 1,698 cases where no laxative was given, 1 in 71 died.

Of 4,399 cases where only one laxative was given, 1 in 18 died.

Of 565 cases where more than one laxative was given, 1 in 8 died.

These statistics do not need any comment. They tell, most vividly, their own tragic story!

Appendicitis must be recognized more and more as a public health and education problem. I am glad to note that the North Carolina Health Bulletin has taken cognizance of this, and recently excellent articles have appeared on its pages. This is only the earliest beginning and the least that can be done. The fullest coöperation between practicing physicians and public health officials is absolutely essential if the mortality rate is to be appreciably decreased. The necessary propaganda to deal with education of the public must fall largely in the domain of activities of the State Board of Health, City and County Health Departments, and other such agencies. I believe there are four explicit reasons why this is advisable:

1. Any problem which causes as many deaths as appendicitis, especially useless deaths, is a public health problem. The economic loss to the state and nation makes this universally true. The fact that every dollar invested can be made to return hundreds of dollars in dividends is in itself an assertion that should interest such officials. Particularly is this true concerning any deaths, most of which are known to be preventable.

2. The boards of health and such agencies are in a better position to inform the public of facts pertinent to the diagnosis and treatment of appendicitis, and of the dangers of laxatives and delay. They do not have the petty jealousies and misunderstandings which arise in the competitive practice of medicine and surgery. If a practicing physician makes an honest effort to acquaint the public of facts they should know of appendicitis, or any other disease conditions out of which he makes his living, the cry of solicitation of practice and other such dire accusations are hurled against him by many of his colleagues. Of course we all realize it is a question of whose foot the shoe pinches! Anyhow, phy-

sicians and others connected with public health agencies are in a much better position to spread this propaganda among the people than the doctor engaged in active practice.

3. Any disease which causes a higher mortality during the lean years of periods of economic depression should certainly attract the attention of public health officers. It is interesting to note that during the years of the last depression the incidence of cases of appendicitis dropped, and conversely, the mortality rate rose definitely. This is to be expected. At such times the causes of the increased mortality should be especially stressed.

4. There is considerable evidence that appendicitis might be classified as a disease of civilization, or perhaps of our mode of living. It is true that those living outside the realm of our so-called civilization are rarely afflicted with the disease. I understand the lower classes of Chinese do not have appendicitis, and that natives living close to Nature seldom, if ever, have it until they become associated with white people and adopt many of their habits of living—in other words, when they come under the influence of our civilization. There is evidence that the disease, or symptoms simulating it, was not common during early colonial days, people then lived more rugged lives than we do today. It is suggestive that the incidence of appendicitis is by no means as common among negroes as among white people. In support of this statement, during the last four years there were 3,647 primary appendectomies performed in the white hospitals of Charlotte against 397 Negroe appendectomies. The ratio of white and colored people in Mecklenburg County is about 3 to 1. This would give an incidence of approximately four times as many cases of appendicitis among white people as among colored. The hypothesis that it is a disorder of civilization should challenge the interest of those in the fields of public health and education.

What is the answer to the query "what are we going to do about it?" I do not know; but I have a suggestion to make for what it may be worth. Let there be appointed a committee of the State Medical Society to work in conjunction with the State Board of Health, this group to act as a central unit. Then let each county medical society appoint a similar committee to work with the local health authorities. Such groups can accomplish much in the way of educating both the profession and the public. Yes, there are times when it would appear that the profession does need some graduate instruction regarding the appendicitis problem; yet a world of praise should go to the medical profession for the splendid work it has done, and is still being done, in the way of diagnosis and treatment of the diseases of the appendix, particularly of the ruptured organ. It is the public that must be informed.

How can this be done? The public must be taught a number of facts: "In the presence of abdominal pain give nothing by mouth, NEVER give a laxative, call your family doctor, apply an ice bag or hot

water bottle. Abdominal pain which persists for six hours is usually dangerous." Laxatives and delay account for nine out of ten deaths from appendicitis. A doctor is the one to prescribe and advise. Do not run to a drug store for some medicine in the presence of abdominal pain. A drug which eases pain is dangerous as it is masking Nature's way of telling us that something is wrong; it gives a false sense of security.

These and other facts can be brought to the public through means of the radio, newspapers and other publications, placarding of drug stores as was done in the Philadelphia campaign, also of schools and industrial plants, addresses before civic clubs, parent-teachers associations, church gatherings, students and so on. The suggested committees can work this out in a satisfactory manner. We have a problem that can be solved and its application is simple.

Chairman Norton: Discussion of this paper will be opened by Dr. Watson S. Rankin, former president of the American Public Health Association.

Dr. Watson S. Rankin (Charlotte): Mr. Chairman, Dr. McKnight's paper has considerable public health significance although it is written on a subject that thirteen years ago, when I retired as a state health officer, would not have been regarded in the ordinary routine as a public health problem, but it has considerable significance as a public health problem now, and for two reasons.

In the first place, this is so because of the relation of the disease to the death rate, and, in the second place, because disease is susceptible to public health methods. That is to say, it is preventable. I don't know who prepared those charts, but I judge they were prepared for Dr. Cooper's paper. He said that appendicitis bears an important relation to the death rate. I call your attention there to the number of deaths between five and nine years of age in the State of North Carolina for a year, 190 deaths from appendicitis. Compare that to measles, 128, the death rate for whooping cough and scarlet fever and diphtheria. I have not given the case rates but if you have the death rate there, the death rate for appendicitis would probably run along with those public health diseases. Swinging over here under the next chart, the next group from ten to fourteen years of age, you find appendicitis just above heart disease. Heart disease is not so frequent at that age but appendicitis caps heart disease in that bracket of life.

Here you have a death rate for typhoid fever of 119 per hundred thousand and from appendicitis there is considerably more than twice that number, and the same holds true over here in the ages of fifteen to nineteen. If you look at appendicitis purely from a statistical standpoint it has considerable public health significance, and especially when it is thrown against vital statistics, such a background as you see spread out there before you and which was not prepared with Dr.

McKnight's paper and mine at all in mind. There are about 20,000 deaths a year, I think, in the United States from appendicitis.

During the last thirteen years most of you know that I have been closely identified with hospital work in the two states, about ten per cent of whose admissions in North and South Carolina are for appendicitis. Between thirty-five and forty per cent of all major surgical operations in North and South Carolina are appendectomies.

Dr. McKnight has pointed out a very interesting difference in the prevalence of the disease in the two races which is probably the explanation of the lower death rate from appendicitis in the southern states as compared with the northern states. The admissions to the colored hospitals for appendicitis are way under those for the white hospitals when based upon a corrected population basis. Why the negro is less susceptible to appendicitis I don't know. I don't know that anyone has satisfactorily pointed this out. Whether it is an anatomical reason or dietary reason or whether it is a matter of susceptibility remains to be determined. That is an interesting problem.

This disease has interesting public aspects when considered from the purely statistical background. It falls more strictly within the field of public health when it comes to the handling of the problem because there, unquestionably, it is a preventable disease.

I suppose if you went into a hospital in your own county and took the fatal cases of appendicitis that occurred in that hospital for the last five years and sat down and ran over the history from the start you would find that over ninety per cent of those deaths would be attributed to one or two causes of appendicitis so well pointed out by Dr. McKnight, and so well demonstrated in the studies and in the work in preventing the disease in Philadelphia, namely, the disease is due to the two p's, procrastination and purgation.

Of course, there the disease comes strictly right into the public health field as a preventable disease susceptible to all the methods of public health education that have been so ably discussed here this afternoon. If the word could be gotten across to the people at large that this is a disease and that the danger of appendicitis lies in these two conditions, postponement, procrastination and purgation, we could probably cut that death rate of 190 over here between five and nine, of 271 between ten and fourteen, 335 between fifteen and nineteen. We could probably cut that death rate in half or three-quarters. We could probably cut that death rate as health officers, Dr. Morris, just about as easily as we could cut our death rate from whooping cough and the measles and scarlet fever. Both public health problems are susceptible to the same treatment as public health education.

I have an idea that a health officer that would undertake to reduce the death rate from appendicitis in his county might find it an easier

problem than the health officer who undertook to reduce the death rate from whooping cough and measles. Thank you very much. (Applause.)

Chairman Norton: Thank you very much, Dr. Rankin. I see my good friend, Dr. B. C. Willis of Rocky Mount back here, and I would like to hear what he has to say as to what we public health workers might do in this problem of appendicitis.

Dr. B. C. Willis (Rocky Mount): I came here to listen and not to say anything, but it is as I see it a question of public health which can do a lot to alleviate the situation. I think the treatment of appendicitis begins in the public health department of the state. I should certainly admonish mothers and parents on both sides of the danger of giving catharsis to cases of pains in the abdomen.

I listened with a great deal of attention to Dr. McKnight's paper and also to the discussion by Dr. Rankin, and I think the matter was very ably handled. The only thing I could say is I think the department can do nothing towards the actual treatment after it has fallen into the hands of the surgeon, but he can do a great deal to prevent the mortality and morbidity by the influence that he may exert on the parents of the children that are so afflicted. It is a perfectly appalling fact to think in this state and in this age, with such a wonderful lot of hospitals, that in seven years you can figure on 665 deaths from appendicitis during the age from five to nineteen. It is appalling, and I think it is high time that the public health department played its part in the saving of lives of the children of this state.

I thank you.

Chairman Norton: Thank you, Dr. Willis.

I might explain that these charts were prepared to use in connection with some meetings that we had with public school teachers with the coöperation of the State Board of Health and the State Department of Public Instruction, discussing with them some of the health problems that they encountered in the schools. These charts were put there to show them the things of which the children that they taught were dying, and they were separated over into these groups so that they could get at the thing that they should emphasize in their public school teaching of health. They were put up here this afternoon because we had papers on tuberculosis and appendicitis and they bring out some important facts. I would be glad to hear some further discussion upon this very important problem. I see Dr. Taylor back there. Do you have something you would like to say on this subject, Dr. Taylor?

Dr. F. R. Taylor (High Point): I am sorry that I came in late. I have been trying to take in all the sessions working this afternoon, and I don't feel as though I have anything to offer.

Dr. T. G. Faison (Hertford): I would just like to say that in this public health work, considering the importance of the nurse in a home, we

never fail to take an opportunity to discuss with women in the home the dangers of cathartics on the mantel-piece and advise them when to use them and when not to use them.

Chairman Norton: I think that is a very important piece of work particularly in view of the fact that we have so much radio advertising and newspaper advertising of drugs encouraging people to take them at all times and under all conditions as if it were the natural thing to do and the proper thing to do.

Dr. F. R. Taylor (High Point): There is one thing that has just come into my mind that happened two or three years ago that I would like to mention. I found left on my front porch, as I supposed was left on the front porches of most of the people of High Point, a very blatant announcement by a chiropractor headed, "Don't let anybody operate on you for appendicitis. Come to me and have some adjustments and I will cure you." I just want to ask you if there is anything that can be done about that. I sent that very promptly to the Bureau of Investigation of the American Medical Association and they reported they were very glad to learn that we had someone in our town that could cure appendicitis without operation, but they didn't know anything that could be done about it.

Chairman Norton: I would be glad to hear some further discussion.

Dr. M. T. Foster (Fayetteville): This may be a little bit out of line, but just a few days ago we had two tuberculosis clinics in my county and we found that a lady had a cavity about the size of a twenty-five cent piece in her lung. Arrangements were made for her to get pneumothorax that afternoon and to continue it until she could get into a sanatorium. About an hour later a local chiropractor called me up and wanted to know if she had been fluoroscoped that day, and wanted to know if he could have permission to make an X-ray of her chest. I told him that I thought it would not hurt her. He undoubtedly X-rayed her chest and he is now treating her for tuberculosis by some method, supposedly spinal adjustment.

I don't know whether she has a positive sputum or not but she has a cavity on her right lung about the size of a twenty-five cent piece. I think that is as important as a chiropractic method that would cure appendicitis. Neither one, in our opinion, is worthy of consideration, and I agree with Dr. Taylor that I wish something could be done about it.

Chairman Norton: Thank you, Dr. Foster. Both of these cases illustrate the urgent necessity of dependable health education.

Dr. N. T. Ennett (Greenville): Mr. Chairman, I have little to say, but I remember when I was in medical college, Dr. George Stone, a very famous surgeon, said to a class on one occasion that he thought it required more medical acumen to prescribe a purgative than it did to pre-

scribe an operation. It seems to me that through the schools it would be possible to do a little effective work along this line.

Speaking as a health officer, my idea is that we could get the school teachers to advise the children, those that are old enough, to take in the meat of this, that a purgative should not be given by anyone at home except on the advice of a physician. We could also tell them that a pain in the abdomen often means appendicitis and it is very dangerous to give a purgative in a situation like that. If you can get the parents conscious of the fact that most deaths from appendicitis are due to purgation, and that pain in the stomach may be due to appendicitis it may make them more careful. Purgatives should not be given. It seems to me if you get that little information over to every home you would be able to reduce mortality from appendicitis very much.

Occasionally I do some first aid work for the Red Cross, and they have had in their manual on Red Cross work, First Aid Red Cross work, advice as to what to do for pain in the stomach. I have often thought that I wanted to write headquarters and cut out that advice.

You all know Dr. Grayson, who catered to the Red Cross until his death a few weeks ago. I had the pleasure of being in college with Dr. Grayson and I thought I would write to him and tell him not to advise any treatment for pain in the stomach. They recommended peppermint water and one or two other things, but the idea is that a pain in the stomach does not call for lay treatment. (Applause.)

Chairman Norton: Dr. Ennett, as I recall it in Dr. Bower's report, his first survey, one of the embarrassing facts brought out was that about twenty per cent of those who took the laxative drugs at one time or another did so on the advice of physicians, and that a considerably further number took these laxatives and cathartic drugs on the advice of nurses and druggists. That brings out the importance of what Dr. MacNider had to discuss in his paper and that all of us need to keep up to date and keep informed on the problem. I would like to have some further discussion.

Dr. J. Roy Hege (Winston-Salem): I would like to say something about a regulation or law, or maybe just a recommendation, that all laxatives have printed on the bottles, "Do not give in case of pain in the stomach." That has been my thought. Has that been up before us?

Chairman Norton: Not that I know of.

Dr. Hege: Somewhere I recall having run into a regulation or a recommendation in which the druggist or the manufacturer of purgative medicine was required to have that notation on the bottle. I am just throwing this suggestion out.

Chairman Norton: Is there further discussion?

Dr. R. B. McKnight (Charlotte): Mr. Chairman, I don't believe I

have anything further to add except to thank the gentlemen for the privilege of appearing before you, and thank you for discussing my little paper.

Chairman Norton: We would like to hear your comments of this problem that was just brought up.

Dr. McKnight: I may mention just one thing which is not mentioning anything that I have not already said. I would like to see such a program as I suggested. I may be all wrong on it but I believe a committee of three or four or five from the State Medical Society could work in conjunction with the State Board of Health and let this group see if similar committees can be appointed in each county to work with the local health authorities and then really get busy and do something. I believe in five years' time we would see a decided decrease in our mortality rates in appendicitis. It is so simple and so sure a method of prevention that I agree with Dr. Rankin fully when he said he thought we would have an easier problem than we have with some of our contagious diseases. I cannot help but believe that would work and I would like to see it tried. (Applause.)

Chairman Norton: Dr. McKnight has made a suggestion here. I wonder whether the group would like to pursue it further. Is there a motion that this section requests the State Medical Society to appoint such a committee to work with the State Board of Health in this problem?

Dr. Ennett: Mr. Chairman, I would like to make such a motion.

Chairman Norton: The motion has been made by Dr. Ennett.

The motion was seconded by Dr. Edwin N. Booker of Selma.

Chairman Norton: The motion has been made and seconded that this section recommend to the State Medical Society that such a committee be appointed by the president. Is there any discussion?

The motion was put to a vote and carried.

Chairman Norton: This completes our formal program of the afternoon. Is there any old business to come before the session? If not, we have got to elect officers, a chairman and a secretary for next year, among other things. Is there any new business? If not, we will proceed to elect a chairman for this section on Public Health and Education.

Dr. Z. V. Moseley (Kinston): I nominate Dr. L. L. Parks.

Chairman Norton: Dr. L. L. Parks, District Health Officer of Edgecombe-Nash, has been nominated.

The motion was seconded by Dr. Ennett.

Chairman Norton: A nomination does not require a second, but I am glad to hear it anyway. Are there any other nominations?

Dr. Foster: I move that the nominations be closed.

CHAIRMAN NORTON: Is there a second to that?

DR. MORRIS: I second the motion.

The motion was put to a vote and carried.

CHAIRMAN NORTON: With your leave we will instruct the secretary to cast a unanimous vote for Dr. L. L. Parks as Chairman of the Section on Public Health and Education.

Now, we would like to have nominations for secretary, Dr. George Sumner has served as secretary during the past year.

DR. RODERICK M. BUIE (Greensboro): I nominate Dr. Sumner.

CHAIRMAN NORTON: Dr. Sumner been re-nominated.

The motion was seconded.

CHAIRMAN NORTON: The motion has been made and seconded. Is there any discussion?

A motion was made that the nominations be closed.

The motion was put to a vote and carried.

CHAIRMAN NORTON: Dr. Sumner has been unanimously re-elected secretary.

Is there any further business? If not, we will adjourn.

The meeting was adjourned at 5:30 p.m.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

WEDNESDAY AFTERNOON

MAY 4, 1938

The Ophthalmology and OtoLaryngology Section of the Medical Society of the State of North Carolina convened at 2:15 o'clock in the Men's Card Room, The Carolina, Pinehurst, Dr. A. C. McCall presiding as Chairman.

CHAIRMAN MCCALL: Will the Section please come to order?

I am sorry we had this slight delay in getting started but we had such a hot political battle on the other side, and we couldn't very well break it up.

The Chairman doesn't have an address to make. Perhaps most of you know I was taken ill last June, and, unfortunately, have been out of my office. I have been trying to get well since then. I got back from Florida last week, and I am happy that I am able to be down here with you.

I felt that anything I might give you would be a little sentimental, so I thought I had better not make an address as Chairman. It is often boring to listen to a Chairman's address anyway, and particularly when he has nothing especially to bring before you. But I want to thank you for the honor shown me in electing me Chairman for the year, and I am sorry I could not be more active to help this Section. We will have

to give entire credit to Dr. Briggs, our Secretary, for the arrangement of the program. I gave him very little assistance. He got up the program practically entirely, and all the credit is due Dr. Briggs.

I again want to thank you and tell you how much I appreciate the honor, and how much I hope you will have a good meeting. Perhaps I will not be able to stay with you through the meeting, because I am still limited in the amount of time I am supposed to be up, although I feel perfectly able to.

Instead of giving an address, I would like to make a suggestion to you, and if you think well of it, you can consider it. I understand they are voting to take a cruise next year, that is, the State Society. However, even before, it had occurred to me that we have so many meetings to attend in the state and out of the state—none of them as important as this, of course—that perhaps it would be feasible for us to consider having the EENT Society meet at the same place that the State Society meets. The EENT could have its meeting in the morning and the Section of the State Society could meet in the afternoon or vice versa. That would give us a full day of real scientific work, and I believe we would have a better attendance. It occurs to me that it is entirely feasible.

I would like for you all to take that thought with you, and if you care to, act on it.

The first paper of the afternoon will be given by Dr. C. W. Bailey of Rocky Mount on the subject, "Surgery of the Nasal Septum and Turbinates."

Dr. Bailey! (Applause.)

Dr. C. W. Bailey: Mr. Chairman, Gentlemen: I have had to change the subject of this paper to some extent, because when I got it prepared on the subject given it was much too long, and I thought it would be much better to change it and cut it down to a paper that could be given in the regular fifteen minutes. So the subject is, "Surgical Treatment of the Turbinate Bones."

Dr. Bailey presented his prepared paper, making the following interpolation preceding the words, "Thoroughly cleanse the nasal passages," on page 434: I think this is where most men make a big mistake—trying to do nose surgery in an office when they have other patients waiting on them, when they are in a hurry, and when the patient is not properly prepared to receive surgery. I think it should always be done in a hospital. (Applause.)

SURGICAL TREATMENT OF THE TURBINATE BONES

C. W. Bailey, M.D.,
Rocky Mount, N. C.

In the past, intranasal surgery has justly borne much adverse criticism from the profession and from the laity. Many mistakes have been made during its development, and probably some will yet be made. Fortunately, however, we always learn from mistakes and try to correct them in future work. One of the most glaring mistakes in intranasal surgery has been the ruthless destruction of the mucous membranes, and generally it is that of the middle and inferior turbinate bones.

Shaeffer (1) and many other anatomists and histologists have demonstrated that the nasal mucous membranes are highly specialized and have definite functions to perform, the most important one being to supply moisture to the incoming air. Also, that of the upper portion of the septum, that of the superior turbinates, and to a slight extent that of the middle turbinates contain the peripheral nerve endings of the olfactory apparatus. These membranes are specially constructed to perform these and other functions and, therefore, should very nearly always be preserved. Only when disease has rendered them impotent to perform their functions should they ever be destroyed.

A search through the literature has not revealed any author who has given any general cause for it being done. Yet there is probably not one of us who has not seen noses permanently impaired from its removal, and also probably every one of us has been guilty at some time. Very likely the reason in every case is that the rhinologist sees a nasal chamber that is obstructed by a hypertrophied turbinate, and that the easiest and quickest way to open the nasal passage is to remove the whole turbinate with its mucosa intact.

Surgical treatment of the turbinates is often necessary in order to provide free ventilation and drainage of the upper sinuses. Frequently we see turbinates that are hypertrophied and pressing against a septum that is straight and also pressing tight against the lateral nasal wall. More often we see compensatory hypertrophy of turbinates filling the concavity of a deflected nasal septum. The studies of Schaeffer (1) indicate that twelve per cent of all middle turbinates contain conchal cells which are analogous to those of the ethmoids both mascroscopically and microscopically. These cells are susceptible to disease the same as are the ethmoid cells, but their resistance to disease is less because the openings are at the top. O'Brien (2) reported a case of meningocele within a middle turbinate. The case was operated on and the meningocele removed, with recovery after a stormy convalescence. Surgical treatment is usually indicated in all cases of hypertrophied turbinates whether diseased or not, in order to facilitate free breathing space to that nostril.

Different surgical procedures have been used. Sinsky (3) and Wahren

(4) have advocated shrinkage of the turbinate mucosa with the use of high frequency diathermy. This method necessarily depends on a resulting superficial fibrosis, and alteration of the normal nasal epithelium. The electro-cautery has been used by Harris (5). This also causes fibrosis and destroys the normal tissues. Both of these methods possibly have a very limited field of usefulness, but their general use is to be condemned for the reasons stated. Electro-coagulation of turbinates as advocated by Hurd (6), Jaros (7), Beck (8), and Silvers (9), is a surgically sound procedure in many cases. It does not destroy the epithelium, but it does reduce the blood supply to it by causing a fibrosis of the subepithelial connective tissues. Undoubtedly any method that considerably alters the blood supply to the mucous membranes is bound to restrict the activity of the epithelial cells. I do not believe this method should be used to the extent of causing bone necrosis and thereby reducing the bone structure of the turbinates as advocated by some authors. If this view is correct, its field of usefulness is necessarily restricted to those cases of soft tissue hypertrophy and hyperplasias. And in these cases the results have been unsatisfactory to me.

Surgical removal of the turbinate by submucous resection, either partial or complete, is the only method at hand to successfully correct marked hypertrophy of the turbinates and at the same time conserve the mucous membranes. Many years ago Freer (10), described a method of performing this operation. Since then Speilberg (11), Strandberg (12), Odeneal (13), and Harris (14), have described different modifications of it. Each of them has its place and is a surgically sound procedure. Skillern (15) advocated complete removal of the anterior third of the middle turbinate in case of low-grade inflammation of the frontal sinus and in the condition of a vacuum frontal sinus. I think submucous resection of the bone from that portion of the turbinate is better. Zeigelman (16) in a very complete article described cases with pathological lesions of the posterior tips using the cold snare for their removal. I know of no criticism that can be directed against this procedure, and in my hands it has been highly successful. I have done this on the inferior turbinates in ninety-three cases during the past seven and one-half years. Removal of this tissue gives symptomic relief for a period of months or years, and the patient is usually well pleased with it. However, we must always remember that hyperplasia of the posterior turbinal tips is in every case the result of drainage from above from chronic sinus infection, and that the necessary procedures for correcting the discharge at its source must be done in order to give the patient maximum relief. Removal of the posterior tips is a very simple procedure and is easily done in regular office practice using local anesthesia. However, Zeigelman (15) says better results are obtained under general anesthesia. Reaves (16), after deciding that posterior tips should be removed, does it using cocaine anesthesia; also using a topical application of ten

per cent dionin solution to the tips only. This causes them to swell so that all the tissue needing removal will more easily become engaged in a snare. I have found this procedure quite satisfactory.

None of the authors quoted has mentioned the advisability of doing a submucous resection of the nasal septum in connection with and prior to operation of the turbinates. It has been my experience, as well as that of others, that the results of a simple submucous resection of the nasal septum are often disappointing, because in straightening the septum frequently one nasal passage is opened and the opposite one closed because of hypertrophy of the turbinates on that side. During the past seven and one-half years in the Park View Hospital and in the Atlantic Coast Line Hospital, I have done two hundred and twenty-nine submucous resections of the nasal septum. In one hundred and eighty-three of these I have done some form of turbinate surgery at the same time. In seventy-nine of the latter cases, a complete resection of the whole middle turbinate was done, forty-eight of them being in connection with an ethmoidectomy which was done at the same time. These other thirty-one cases were among the earlier ones in my work, and since then I have had occasions to wish for that mucous membrane in a number of them. The complete removal of a middle turbinate often makes that nostril too open and produces a dry passage and results in the formation of crust. In doing a complete ethmoidectomy, it is always necessary to completely remove the middle turbinate, but only in those cases of polypoid degeneration of the turbinate do I think it advisable. Usually, in cases of hyperplastic rhino-ethmoiditis and atrophic rhino-ethmoiditis, I leave the middle turbinate intact instead of doing a complete ethmoidectomy. Many of these cases get well or are markedly improved and are so much better off with a functioning turbinal mucosa than they would be without it. One can always go back and remove the turbinate and complete the ethmoidectomy if necessary, but when once it is removed it can never be replaced. In following this line of reasoning, it is always necessary to explain very thoroughly to the patient the pros and cons, and have him understand that we are trying to do all that is necessary without doing too much radical surgery at first. Of course, it is necessary to have a reasonable and understanding patient when following this line of thought.

I have never completely or partially removed an inferior turbinate with the musoca intact, and, judging from the few cases I have seen which were done by others, I am reasonably sure that it is always a mistake to do it. Removal of this turbinate makes an open channel through the floor of the nose through which air passes in and out without ever reaching the upper recesses of the nasal chamber, and consequently it is not properly prepared for the lower respiratory tract. Partial submucous resection of the inferior turbinate bone is often indicated and complete submucous resection of it is seldom indicated.

In fifteen cases I have done a partial submucous resection of this bone, but in no case have I completely removed it.

Submucous resection of the middle turbinate has been done in thirty-six of my cases. In some cases only the medial half of the bone was removed, while in others the whole bone was removed. In the other fifty-three cases of submucous resection of the nasal septum, at which time some form of turbinate surgery was done, it consisted of partial or complete removal of the anterior third of one or both middle turbinates, according to Skillern's (14) technique. The results of this procedure have also been very satisfactory to me, although occasionally more work has had to be done later.

The technique I have generally followed in doing a submucous resection of a turbinate bone is as follows:

1. It is always a hospital procedure.

2. Thoroughly cleanse the nasal passages.

3. The membranes are reduced by using topical applications of 1-1000 adrenalin chloride. This is followed by topical applications of 20 per cent cocaine solution. Sometimes it is necessary to also inject one per cent procaine solution in the mucosa.

4. I have always done a submucous resection of the nasal septum first. This has usually been very necessary and always is a distinct advantage in that it gives much more working space through which a better approach to the turbinate is made. After the septum has been placed in the mid-line, the turbinates can be remodeled accordingly.

5. Decision as to the amount of bone to be removed from the turbinate is then made. Using a sharp, rounded, small blade Bard-Parker knife, a clean incision is made through the mucosa and periosteum to the bone. Usually the incision is along the inferior border of either turbinate, but sometimes the anterior vertical incision described by Speilberg (11) is used when working on the inferior turbinate. Careful dissection then follows, completely exposing the bone. The bone is removed as indicated and then the mucosal layers are pressed together with any excess mucosa being removed. No sutures are taken. Of the last two hundred and thirteen septal resections that I have done, none were packed or splinted, and I have not found it necessary to use any packs after a turbinate resection. At no time have I later had to pack the nostrils in these cases, and certainly the patient is very much more comfortable. Healing takes place rapidly and the convalescence is much shorter. Soon the nostrils are open and the patient is enjoying an open, moist nose, with as nearly the normal ability to function as it was possible to give.

Perfection is not claimed for these procedures, however, I am advocating them as being the most conservative and positive ones to give relief to patients suffering from such obstructions in the nose.

BIBLIOGRAPHY

(1) Schaeffer, J. Parsons: Text, The Nose and Olfactory Organ.

(2) O'Brien, G. R.: A Meningocele Within the Middle Turbinate. Archives of OtoLaryngology, September 1931.

(3) Sinsky, H. L.: Turbinate Shrinkage by High Frequency. Amer. J. Of Phys. Ther., 9:94.

(4) Wahren, Frederick L.: Reduction of Turbinate by Medical Diathermia. Arch. Of Phys. Ther., X-ray and Radium. 14:228 April 1933.

(5) Harris, M. L.: Partial Turbinectomy by Clamp and Cantery. Laryngoscope, 35:903 December 1925.

(6) Hurd, Lee M.: Bipolar Electrode For Electrocoagulation of the Inferior Turbinate. Arch of OtoLaryn., 13:442 March 1931.

(7) Jaros, Joseph F.: Electrocoagulation of Turbinates. A Duoterminal Flexible Electrode. Arch. of Phys. Ter., X-ray, Radium, 14:533 September 1933.

(8) Beck, Joseph C.: Pathology and Intramural Electrocoagulation of the Inferior Turbinate. Annals of Otology, Rhinology and Laryngology, 39:349 June 1930.

(9) Silvers, L. J.: Electro-Surgery in Rhino-Laryngology. Arch. Phys. Ther. March 1932.

(10) Freer, W. I.: Text, Loeb, Operative Surgery of Nose, Throat, and Ear. 1917.

(11) Speilberg, W.: The Treatment of Nasal Obstruction by Submucous Resection of the Inferior Turbinate Bone. Laryngoscope, March 1924.

(12) Strandberg, O.: A. Method of Total Removal of the Inferior Turbinate Bone. J. of Laryn. and Oto., 49:65. February 1924.

(13) Odeneal, T. W.: Submucous Trubinectomy. Arch OtoLaryn. 2:215 Feb. 1930.

(14) Harris, H. I. Improved Technique for Submucous Trubinectomy. Annals of Otology, Rhinology and Laryngology. June 1936.

(15) Skillern, R. V.: Text, Accessory Sinuses of the Nose. 1923.

(16) Ziegelman, E. F.: Pathologic Lesions of the Posterior Turbinate Tips. Arch. of OtoLaryng., 15:261 February 1932.

(17) Reaves, W. P., Greensboro, N. C.: Personal Communications.

CHAIRMAN MCCALL: Dr. Bailey's paper is now open for discussion. The discussion will be opened by Dr. L. M. Griffith of Asheville. Is Dr. Griffith in the hall?

DR. L. M. GRIFFITH (Asheville): Dr. Bailey limited his paper to surgery of the turbinates alone because, as he said, there is too much time involved in attempting to discuss the operative procedures on the septum as well.

Dr. Bailey's plea for the preservation of the nasal mucous membrane is a commendable one. All the operative procedures he has called to our attention are directed toward the one end, preservation of nasal function. Nasal breathing is the all-important function of the nose; smell, phonation, taste are all dependent upon free nasal respiration. Given free nasal breathing we still would not have a normally

functioning nose unless the normal nasal mucosa was preserved. The necessity for free nasal breathing was especially brought out during the World War when the War Department was advised by the British Medical Service that of three classes of individuals not to send abroad one was the soldier who did not have free nasal respiration. The experience of the British Army had been that this type of soldier was especially susceptible to chest disease.

One procedure I have found of value, especially in children, is infraction of the middle turbinate.

It has not been my experience to find as frequent indication for interference with the turbinates nor as frequent indication for submucous resection of the nasal septum as has been the lot of Dr. Bailey. This is due most likely to my extreme conservatism in doing intranasal surgery.

I well know that many men consider abnormalities of the nasal septum responsible for most changes within the nasal chambers.

It was a pleasure to read Dr. Bailey's paper and a privilege to be allowed to discuss it.

Dr. C. W. Bailey: There is one point I would like to clarify. I suspected that there would be some question raised as to the number of cases, but I think that is accounted for in that not all of these cases came out of my ordinary routine practice. A large number of my cases, as I stated in my paper, were done at the Atlantic Coast Line Hospital, which serves the entire Northern Division of the Coast Line Railroad. We do the hospital work there. Those cases are referred in from all towns along there, all the way from Richmond down to Florence, South Carolina. That explains the number of cases.

I do not advocate submucous resection just to remove a spur that is present, unless it is causing obstruction and pressure on a turbinate. I don't believe in just operating for the fun of it, to remove a spur and give an open nostril, but only in cases where there is definite obstruction.

Chairman McCall: The paper is now open for general discussion? Will someone discuss Dr. Bailey's paper? It is a mighty good paper.

Dr. H. C. Wolfe (Greensboro): I didn't come down here to make any comments on any of these papers because I noticed in the program that someone was designated to discuss each paper. However, I think it is a darn shame for a man to go to the trouble of writing a paper and then not have anyone say anything about it.

I enjoyed Dr. Bailey's paper. He did a lot of work in preparing it. I am in agreement with everything he said. Of course, life would be mighty easy if we all agreed on everything. I think it is essential, however, that you have some support in doing a submucous resection. I read a paper on submucous resection a couple of years ago, in which it was stated that if you have a bad deflection, and after you have removed the deflected cartilage and bone, unless there is some support

to cause a coaptation of the flaps, you are likely to have a blood clot formation between the flaps, or you are likely to have a crooked septum when you get through, because if one side is longer than the other, it stands to reason that unless it is put in its new position and held there by some form of splint, the chances are that the septum will still be deflected.

As far as the comfort of the patient is concerned, I think a rubber tube, or two of them, on one side, which gives ventilation to the post-nasal space acts very well. It prevents a stopping up of the Eustachian tube, and in twenty-four hours' time the tube can be removed.

I enjoyed Dr. Bailey's paper, and I think somebody else should say something about it.

Chairman McCall: Is there any further discussion of Dr. Bailey's paper? If not, we will ask Dr. Bailey if he wishes to say anything in closing.

Dr. C. W. Bailey: Mr. Chairman, there is little else to be said about it. Of course, the subject of the paper, in general, was confined to the submucous resection of the turbinate bones. Dr. Wolf's discussion had reference chiefly to submucous resection of the nasal septum.

I used to pack all nasal septums after doing a resection, until one time I gave a patient sodium amytal that didn't react well. I had used a metal splint, clasps, to hold the septum together and I was forced to take it out very soon after the operation because the sodium amytal had made him crazy. I was afraid he would injure his nose if I left it in. He got well so quickly and nicely without any splint, or any packing, that I then decided to try some others without it, and since then I have never packed one. I have found that they get well much better without it than with it.

Since then I have never had a perforation of a nasal septum. That is in some 213 cases, I think. Before then I did have some perforations.

It does not matter how much packing you do in trying to place a septum, for as it heals it is going to find its own position, which is stretched tight across the midline anyway. It does not matter where we pack them to.

Thank you. (Applause.)

Chairman McCall: Thank you, Doctor.

A prize was not given last year, I understand, for the best paper, but I believe a prize is to be given this year for the best paper in each Section. I will appoint as a committee Dr. McPherson and Dr. Wolfe, to determine the best paper presented this afternoon. Of course, our guest speaker doesn't share in that.

Announcements.

Chairman McCall: Our guest speaker, Dr. Breeding, wishes to leave

pretty soon. I have spoken to the next essayist who kindly consented to let Dr. Breeding have his place on the program.

We will now hear the guest speaker, Dr. E. G. Breeding, of Washington, D. C., who will talk to us on "Some Observations and Studies of a Series of Mastoidectomies and Meningeal Complications."

Dr. E. G. Breeding: Mr. President, Ladies and Gentlemen: I wish to express my deep appreciation for the honor and privilege of being with you on this occasion. I don't entirely feel that I am lost in being down in North Carolina because about twenty-five years ago I started my medical career in Wilmington and advanced slowly up the state, where I spent another year or two. So today I see a great many old friends whom I haven't seen in a long time.

This series of observations of mastoidectomies with meningeal complications that I want to talk to you about is the result of quite lengthy investigations—at least I spent a long time in making these investigations. However, I am not going to bore you with a long talk. I hope to be able to keep within the confines of your allotted time of fifteen or twenty minutes.

Chairman McCall: There is no limit.

Dr. Breeding: During this past winter, if you have had the same experience in North Carolina that we have had in Washington, the mastoid situation has been very much less than it has been in previous years. Whether it was due to the depression or recession, or not, I do not know. But, as I will show you later in my paper, the percentage of mastoidectomies this year has fallen off greatly. We had less than a third of what we have normally. Therefore, not having so much work to do, I have spent a lot of time home in the evenings and in the hospitals looking over case reports.

I did not let Dr. McCall know the title of my paper because I didn't know exactly what I was going to call it. Therefore, he announced it in substance, but I want to make a few little changes here, and we will call it, "The Observations from a Study of the Records of Over 1,000 Mastoidectomies with Considerations of Meningeal Complications and Their Treatment" that we are giving at the present time.

Dr. Breeding presented his prepared paper, which was illustrated with slides, in the course of which he made the following interpolations:

(1) preceding the words, "This leads me to a discussion," on page 442: I would like to digress here a moment to report a case which I was called to see last Saturday of a child five years old who had all the usual signs and symptoms of meningitis when I saw him. The x-ray reports showed a normal mastoid, the meninges were normal, but I knew he had some intracranial complications and his mastoid should be opened, notwithstanding the X-ray findings.

He had a little tenderness but a normal eardrum. We opened the ear-

drum and didn't get any pus. We opened his mastoid and found an old mastoid that had been going on at least four weeks. How in the world the X-ray didn't pick it up, I can't tell. We cultured the pus from the mastoid at the time of the operation, did a spinal tap, cultured that, and by the time the operation was over, we got a report from the laboratory on the smears, which showed a sharp chain streptococci infection, type later to be determined. In view of that we instituted appropriate treatment, and three days later we received a report that it was a hemolytic viridans, or green streptococcic infection. The treatment that I will mention later did not touch him, and in spite of all the treatment we could give him, he died on Monday of this week.

(2) Preceding the words, "In a recent publication," on page 443: I asked him what his percentage was, and he thought it was somewhere between seventy and ninety per cent cured.

(3) Preceding the words, "Quoting them: 'Our experience in the treatment'," on page 443. They have probably done more work on sulfanilamide than anyone else in this country.

(4) Preceding the words, "7. Cultures from all mastoid infections," on page 444: Probably some of those who are confining their work to general hospitals may not like to hear this statement, but certainly it is proved in this large series of cases.

Dr Breeding then concluded the presentation of his paper. (Applause.)

OBSERVATIONS FROM A STUDY OF THE RECORDS OF ONE THOUSAND MASTOID OPERATIONS, WITH CONSIDERATIONS OF MENINGEAL COMPLICATIONS AND TREATMENT

Earle G. Breeding, M.D.
Washington, D. C.

This presentation of my observations was made from a study of the records of over 1,000 mastoid operations in 10 civilian hospitals located within the District of Columbia. The several government hospitals were not included for the reason that most of the patients in these institutions are from outside of the metropolitan area of Washington, and from the personnel of the various services stationed in the city, which do not constitute a part of the permanent population.

Nine hundred and thirty-four operations, covering a five-year period, were reviewed at the Episcopal Eye, Ear and Throat Hospital, where I had access to all the records. One hundred and sixty-five operations were performed during the year 1937 in the remaining nine general hospitals in Washington. The records, therefore, from all the hospitals cover a total of 1,099 operations from 1933 to 1937, inclusive.

In computing the data it will be observed from the slide that of the

934 operations at the Episcopal hospital 846 were simple mastoidectomies and secondary operations for complications, and 68 operations were radical mastoidectomies performed during the five-year period. It was observed that during this period the largest number of operations was performed in 1936, with a total of 275; and the smallest number was performed in 1933, with a total of 128. The largest number in any one month was performed in March 1936, with a total of 50, and during the five years the month of April produced the largest number, with 131. September showed the smallest number for the five years, with 33. In October 1933 and 1934, only two simple mastoidectomies were noted each year. This shows that in late winter and early spring mastoid disease is most prevalent, and that in late summer and early fall the fewest number of cases is seen.

As previously stated, there were performed in the general civilian hospitals in 1937, 165 mastoidectomies, and in the Episcopal Hospital that year 135 operations were performed, making a total for the year in Washington of 300. The average number per year at the Episcopal Hospital for the five-year period, therefore, was 186.8, and assuming that the yearly average in the other hospitals was proportionately the same, this yearly average for all the hospitals would be approximately 400. Further calculating on this basis from these 10 hospitals, drawing their patients from a metropolitan area whose population is estimated to be between 600,000 and 700,000, the deduction would be that one person in approximately 1,700 or 1,800 would require a mastoidectomy each year. This may seem a little high, and it probably is for rural districts, but I believe it is fairly correct for urban areas where the population is more densely settled and, therefore, mastoid disease is certainly more commonly encountered. This average would probably be less in our Southern and Southwestern cities where climatic conditions influence the prevalence of the disease.

Now, let us consider a further classification and a more detailed study of 135 operations for the year 1937 at the Episcopal Eye, Ear and Throat Hospital; there were 101 simple mastoidectomies, 13 radical and 21 secondary operations, which included 3 jugular ligations, two operations for petrositis, two for brain abscesses, two for meningitis and 12 recurretements for persistent discharge. The simple mastoidectomies, therefore, were 86.6 per cent of the total number of operations; 11.4 per cent were for radical operations, and 15.5 per cent were secondary operations.

In this series 86 per cent were white patients and 14 per cent colored; 54.4 per cent were females and 45.6 per cent were males. The average age was 19.6 years, the oldest being 65 years of age, and the youngest five months. Sixty, or 52.6 per cent, were private patients, and 54, or 47.4 per cent were dispensary patients. The right side was found to have been involved in 61 patients, or 53.5 per cent, and the left side in

53 patients, or 46.5 per cent. The duration of the disease prior to operation in the acute cases was 18.8 days. This is considered by many aural surgeons to be the safest time in the average case to operate—from the second to the third week, there are fewer complications at this time. Of course, the duration of chronic casts is not shown, for it may be anywhere from a few weeks to many years, as in the case of one of these patients who had a discharging ear for 45 years. The average length of stay in the hospital after operation was fourteen days, the longest stay was four and one-half months, and the shortest was 3 days.

Results

One hundred and ten patients, or 96 per cent, were discharged improved, and four patients, or 3.5 per cent died. The death rate for the 135 operations, however, was only 2.9 per cent. In 300 cases of mastoiditis reported by Kreutz and Witten,[1] of the Henry Ford Hospital in Detroit, from 1926 to 1936, there was a mortality of 6.3 per cent. This rate compares with the rate of the combined hospitals in Washington of 6.8 per cent as shown later in this paper.

At the Royal Infirmary,[2] Edinburgh, 891 operations for mastoiditis from the years 1920 to 1934, showed "intracranial complications of 139 patients with 60 fatalities, or an average of 6.7 per cent. Eighty per cent were due to streptococcus hemolytic infection, and pneumococcus accounted for 18 per cent of the uncomplicated cases, and 14 per cent of the complicated cases. In each group were type III pneumococci."

Now, let us study the 934 operations at the Episcopal Hospital over the five-year period. In 1933 there were 114 simple and 14 radical operations, or a total of 128, with three deaths, or a mortality rate of 2.3 per cent, all deaths being due to meningitis. In 1934 there were 176 operations, with 10 deaths, or a mortality rate of 5.6 per cent, all reported due to meningitis. In 1935 there were 220 operations, with seven deaths, or a mortality rate of 3.2 per cent, all reported due to meningitis. In 1936 there were 275 operations, with 13 deaths, or 4.7 per cent, with 11 reported due to meningitis, one petrositis and one cardiac complication. In 1937, as previously mentioned, there were 135 operations, with four deaths, or 2.9 per cent, which were caused by: jugular thrombosis, one; meningitis, two; brain abscess, one. The death rate for the five years was, therefore, 37, or 3.9 per cent. Thirty-three of 37 deaths, or practically 90 per cent, were due to meningitis. This death rate includes both acute and chronic cases, but the rate for the acute cases only was 4.37 per cent.

The complications reported by Kreutz and Witten,[1] as reported in the article referred to previously, showed 16 per cent complications in their series of 300 cases. The complications in our series were 15.5 per cent for the year 1937.

The next slide shows the death rate and causes of death in all of

our hospitals. Notice that in the 300 operations there were 19 deaths, or 6.8 per cent mortality. Of the nine general hospitals only, there were 165 operations with 15 deaths, or a mortality rate of 9 per cent. This rate is significant in that it is more than twice as much as in a hospital for the special treatment of such diseases. The causes of death, it will be noted, are pretty much the same in all the hospitals, except that such general conditions as tubercular, heart, and diabetic complications are reported from the general hospitals as etiological factors. This would, of course, cause a larger mortality rate.

I have refrained so far from mentioning the bacteriological findings from ear and mastoid cultures, as I am unable to give an accurate report, since cultures are not required in many of the hospitals, particularly of private patients, and even if the records were complete it would have required too much time to have attempted such a search from the charts of all the hospitals, where access for examination was not easily obtained. In the Episcopal Hospital, only the patients admitted through the dispensary were required to have cultures made (this rule has since been changed to apply to all patients), and, therefore, an accurate record could not be obtained except from the clinic cases. These records showed approximately 70 per cent were due to the streptococcus hemolyticus, five per cent streptococcus viridans, eight per cent pneumococcus, and 17 per cent to the staphylococcus group. So few of the pneumococcic infected patients were typed that no attempt was made to classify them. Again referring to the paper of Kreutz and Witten,[1] who had the opportunity to have all their 300 cases cultured for infection, it was reported that "63 per cent were hemolytic strep., 7 per cent pneumo., type III predominating, with 16 cases of each, eight died, or a mortality of 50 per cent. This showed that the type III pneumococcus was 12 times as deadly as the streptococcus in mastoid complications." All of their findings compare fairly constantly with ours at the Episcopal Hospital.

I wish to report the observations of Page,[3] made at the Manhattan Eye, Ear and Throat Hospital in New York, who emphasizes the necessity of culturing all cases, not only at the time of the operation, but at the time of the paracentesis in order to know what kind and type of infection is causing the disease. The reasons are obvious. Due to the recently reported specific serum for the treatment of type III pneumococci infections, and with the increasing use of chemotherapy, unquestionably some interesting results will be obtained in the treatment of this fatal type of infection.

This leads me to a discussion of the treatment of meningeal complications.

In February 1936, the first report in the literature appeared on "The Cure of Hemolytic Streptococcus Meningitis with the Use of Prontosil." [4] Since then reports from the literature are numerous. In all cases of

local or generalized meningitis where the focus of infection is in the mastoid, the mastoidectomy should be done promptly and the dura exposed as widely as possible, and at the same time the administration of sulfanilamide in as large a dose as the patient can tolerate. Our early use of sulfanilamide was to give large doses by mouth as long as the patient could tolerate the drug, and also administering the drug intraspinally, injecting within the canal a saline solution of sulfanilamide equal to the amount of fluid removed. In the last several months we have observed that large doses by mouth, when tolerated, and the subcutaneous administration of sulfanilamide have proved equally as effective as administration within the spinal canal, and at the present time our pathologist[5] is advising this latter method of administration exclusively. He gives to an adult a dose of as much as 120 grains by mouth within 24 hours, and if not tolerated well by the patient, then subcutaneous injection is resorted to on the following scale:

Up to 40 pounds of patients weight, .8 gram in 100 cc. of normal salt solution is administered as a minimum dose.

From 40 to 80 pounds of weight, 1.6 grams in 200 cc.; 80 to 100 pounds of weight, 2.4 grams in 300 cc.; and from 120 pounds up, 3.2 grams are given in 400 cc. by hypodermoclysis.

Our pathologist reports approximately 25 cases of meningitis have been treated by this subcutaneous injection method with brilliant results.

In a recent publication by Kopetzky[6] on Otogenic Meningitis, he states; "Chemotherapy, especially sulfanilamide, has given me better results than I have obtained by any other drug, sera or vaccine. It is demonstrable in the blood and in the cerebrospinal fluid when given by mouth. Combined with small transfusions it is the best means to date which I have employed."

Rosenthal,[8] of the United States Public Health Service, has also found sulfanilamide a potent therapeutic agent, in experimenting with pneumococcic infections with virulent strains in animals, particularly with type III, and he concludes that up to the present time no other agent has proved as effective against pneumococcic infections as sulfanilamide.

At a meeting of the Middle Section of the American Otological, Rhinological and Laryngological Society on January 26, 1938, it was stated that, "the intravenous injection of 1/10 cc. of a one per cent solution of methylene blue per kilo. of body weight was reported as a catalyzing agent which hindered the formation of metahemeglobin and permitted the use of larger doses of sulfanilamide without bad blood effects."

Recent works of Long and Bliss[9] at the Johns Hopkins Universtiy are also interesting.[3] Quoting them: "Our experience in the treatment

of critical pneumococcical infection in human beings has been primarily limited to those of the middle ear and mastoid. Our observations tend to show that sulfanilamide has about one-half the chemotherapic effect in pneumococcal infections that it has in hemolytic streptococcic infections of the middle ear and mastoid."

It would seem, therefore, from our experiences and the experiences of other investigators in the use of sulfanilamide, that we have a drug of unquestionably proved value, and that in any intracranial complications due to hemolytic streptococcic or pneumococcic infections the drug should be used extensively together with frequent blood transfusions, and the administration continued in diminishing doses for several days after the spinal fluid and blood are sterile.

Persistent otorrhea, which is the cause of most secondary operations, is frequently due to a focus of infection in the nose or throat, and if found should receive attention. Frequently an associated sinus infection is found, and in meningeal complications a most rigid examination for sinus infection is necessary. This point has been emphasized by Eagleton[7] from his autopsy studies. He (Eagleton), in the same publication, further states: "A considerable percentage of all cases of meningitis due to the pneumococcus, type III infection (if not all), have their primary infection in a sphenoidal suppuration. But meningitis with an immediate blood stream infection originating from osteomyelitis of the sphenoid or petrous apex is generally due to a streptococcus." He, therefore, concludes that if treatment is to be successful there must be an early attack on the sphenoid. These observations of Eagleton were published six years ago, but I am strongly of the opinion that, notwithstanding our present knowledge of chemotherapy, the nasal accessory sinuses should always receive serious investigation in otogenic complications.

Conclusions

1. Mastoid disease is most frequently found in the late Winter and early Spring months.
2. The average age for the disease is under 20 years.
3. The time of the greatest safety for operation is between the second and third week.
4. Streptococcus hemolytic infections are prevalent in more than 70 per cent of the cases, and pneumococcus infection shows the highest mortality.
5. Meningitis was responsible for 90 per cent of our mortality during the five-year period.
6. The mortality rate is apparently less in special hospitals than in general hospitals.
7. Cultures from all mastoid infections are of paramount importance.
8. Sulfanilamide, or some of the allied preparations, combined with

blood transfusions, seems at present our best agent in treating meningeal complications.

REFERENCES

[1] Kreutz and Witten—Observations in Three Hundred Cases of Acute Mastoiditis—Annals of Oto. Rhino. and Laryng., Vol. 46—No. 4, Page 106—Dec. 1937.

[2] Fraser and Halliday (J. Laryng. and Otology, 51:619:630—Oct. 1936 (Reported in Yearbook E.E.N. and T. 1937—Page 273).

[3] Page, J. R., Bacteriology of Acute Infection of Middle Ear and Mastoid. Arch OtoLaryng. 20:447-451. Oct. 1934.

[4] Yearbook of Eye, Ear, Nose, and Throat, 1937, Page 391.

[5] Sellinger M., Pathologist for Episcopal Hospital, Washington, D. C. Personal communication.

[6] Kopetzky, S. J., The Management and Treatment of Otogenic Meningitis. Annals of Oto., Rhino., and Laryngology; Vol. 47—No. 1. Pages 117-133—March 1938.

[7] Eagleton, Suppurative Meningitis of Otitic and Nasal Origin. Orchives of OtoLaryngology (Reprint), Vol 15, June 1932.

[8] Rosenthal.

[9] Long & Bliss.

Year	Simple	Radical	Total	Deaths	Per Cent	Causes of Deaths
1933	144	14	128	3	2.3	Meningitis, 3
1934	153	23	176	10	5.6	Meningitis, 10
1935	199	21	220	7	3.2	Meningitis, 7
1936	258	17	275	13	4.7	Meningitis, 11 Petrositis, 1 Cardiac Complications, 1
1937	122	13	135	4	2.9	Thrombosis, Jugular, 1 Meningitis, 1 Brain Abscess, 1 Meningitis, 1
TOTAL	846	88	934	37	3.9 4.37	(Simple only)

Of the 37 Deaths, 33 were due to Meningitis, or 89 per cent.
From the Records of the Episcopal Hospital for Five years, 1933 to 1938.

HOSPITAL	Simple	Bi-lateral	Radical	Total	Deaths	Causes of Deaths
EPISCOPAL	122		13	135	4	Jugular Thrombosis, Meningitis, Brain Abscess; Meningitis
CHILDREN'S	66	7		73	6	T. B. Meningitis; Miliary T. B.; Pneumococcus Meningitis; Post Measles; Congestive Heart Disease; Unknown
GALLINGER	25			25	3	Thrombophlebitis, Acute Mastoiditis; Acute Mastoiditis?
PROVIDENCE	17			17	3	Meningitis and Diabetes; Septicemia and Meningitis; Pneumococcus Meningitis
GARFIELD	17			17	1	Occipital Lobe Abscess
SIBLEY	15			15	0	
GEORGETOWN	13			13	1	Meningitis
EMERGENCY	3			3	0	
GEORGE WASH.	1			1	1	Brain Abscess
HOMEOPATHIC	1			1	0	
TOTAL	280	7	13	300	19	6.8 Per Cent Mortality

Excluding Government Hospitals, there were ten civilian hospitals in which were performed 300 mastoidectomies in 1937, and approximately one person out of 1,800 of the population of Metropolitan Washington had a mastoidectomy.

Color		Sex		Age	Class		Side Involved		Duration of Disease Before Operation	Mastoid-ectomies		Secondary Operations	Number Days in Hospital	Results	
W.	C.	M.	F.	19.6 years	Priv.	Disp.	Rt.	Lft.	Acute	Simp.	Rad.	3 Jugular Lig. 2 Petrositis 2 Brain Abscess	Longest 4½ months Shortest 3 days	Imp.	Died
98	16	52	62	Oldest—65. Youngest—5 months	60	54	61	53	18.8 days	101	13	2 Meningitis 12 Recurrettements	Average length of stay 14.09 days	110	4
86%	14%	45.6	54.4		52.6	47.4	53.5	46.5		88.6	11.4	Total—21, or 15.5 per cent of 135 operations		96.5	3.5%

Results: 135 operations, 4 deaths 2.9 per cent.
Largest number of operations in April, 22.
Smallest number of operations in July, 4.
From the Records and Charts of the Episcopal Hospital for 1937.

Year	January		February		March		April		May		June		July		August		September		October		November		December		Total	
	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.
1933	11	2	14	0	14	1	13	2	16	4	12	2	4	0	5	0	3	0	2	1	11	1	9	1	114	14
1934	20	3	14	5	14	0	16	1	22	2	17	0	8	3	8	2	3	1	2	3	17	1	12	2	153	23
1935	17	1	18	2	12	1	26	0	39	1	27	2	17	4	12	1	6	4	10	3	3	1	12	1	199	21
1936	23	3	29	1	50	0	47	2	28	0	25	4	12	1	10	1	8	2	8	1	8	1	10	1	258	17
1937	16	1	19	2	12	1	22	2	12	0	9	2	4	1	6	1	5	1	5	0	6	0	6	2	122	13
TOTAL	87	10	94	10	102	3	124	7	117	7	90	10	45	9	41	5	25	8	27	8	45	4	49	7	846	88

Average per year on this basis is 169.2 for Simple Mastoidectomies.
Average per year on this basis is 17.6 for Radical Mastoidectomies.
Episcopal Hospital average per year 185 for 5 years (135 for 1937). All other Hospitals average per year 215 for five years (165 for 1937). All Hospital average 400 per year, or 2,000 for 5 years. Hospitals exclusive of Episcopal average 1,075 for 5 years. 1 in 1,700 for 5 year average.
From the Records of the Ten Civilian Hospitals in Washington.

Dr. John B. Wright (Raleigh): We want to thank Dr. Breeding for this most enlightening and instructive article on mastoid. We are glad to welcome him back to the best state of the Union. He comes from Washington where everything is new, the New Deal, and a new name for an old-time panic—they call it recession—and it is refreshing to have somebody come from Washington who is really an honest-to-goodness straight-shooter. (Laughter and applause.)

Chairman McCall: On behalf of the Society, I want to thank Dr. Breeding for presenting this subject. He covered it very thoroughly, and we appreciate it.

Dr. Breeding: I believe it is usually customary not to have any discussion of the guest speaker's paper but if anyone wishes to discuss it, I will be most happy to hear it. I mentioned hematherapy in these mastoid cases, and there is a diversity of opinion on it. If anyone wants to express his opinion, I would be only too glad to have it. I only expressed my opinion from our observations there.

Chairman McCall: I personally want to add my approval of your paper and tell you how much we appreciate your coming down to be with us.

As Dr. Breeding just said, if anyone cares to discuss his paper, disagree with it, or what not, he would like you to do it. Does anyone care to discuss this subject?

If not, owing to the fact—as I told you before—that I get a little weak in the knees occasionally, I am going to retire for a little while. I will ask Dr. Griffith to assume the Chair, and we will start off with the next paper by Dr. Horace Strickland, Case Presentation, "Aniseikonic Lenses."

Dr. Griffith assumed the Chair.

Dr. Strickland presented his prepared paper.

Dr. Horace Strickland: Mr. Chairman, Members of the Society: I would like to discuss a few points about aniseikonic lenses and later on, with your permission, I will show you a case.

PRESENTATION OF A CASE WITH ANISEIKONIC LENSES

Horace Strickland, M.D.
Greensboro, N. C.

One of the recent important and practical advances in the field of Ophthalmology pertains to Aniseikonia. By Aniseikonia is meant that condition in which the size or shape of the ocular image of one eye differs from that of the other.

The problems have been to determine whether, for a given individual, a difference in size and shape of the ocular images exists, the nature of

the difference, how such a difference affects the function of vision and how it can be corrected. We are indebted to Professor Ames and his coworkers of Dartsmouth College for the present state of our knowledge of this subject.

We have, however, for a long time been aware of the fact that, under certain circumstances, the size or shape of the ocular image of one eye differed from that of the other. The classical example has been in the group of individuals with monocular aphakia. If the aphakic eye was corrected and the visual acuity approached that of the normal fellow eye, severe and disagreeable ocular symptoms was the result of the aniseikonia. This was brought about by the superimposition of the larger ocular image of the corrected aphakic eye upon the smaller ocular image of the normal fellow eye. The aphakic eye, therefore, was invariably left uncorrected. The poor vision was conducive for suppression and the patient was free of ocular symptoms. Not infrequently, however, such eyes, because of the loss of fusion, would diverge with all of the attendant functional and cosmetic disadvantages of a concomitant divergence.

The ophthalmo-eikonometer is a complex and expensive instrument and there are only a few in use, but with this instrument the presence and magnitude of aniseikonia are determined both at far and near, to within an accuracy of from one-fourth to one-half per cent.

The smallest aniseikonic difference that can be distinguished by persons having normal binocular single vision is approximately one-fourth per cent. Differences of three fourths to one per cent are found to produce symptoms in most cases, although some individuals can tolerate one per cent or more of aniseikonic difference without discomfort. In binocular single vision the differences do not exceed approximately five per cent. In some strabismus cases differences of from 5 to 15 per cent have been found. It is quite probable that such differences are important factors in the development of the strabismus. In monocular aphakia where, after operation, the refraction has been corrected, the difference in the size of the ocular images may be as high as 40 per cent. In this category I am impressed by the tremendous importance such correction would be for those whose occupation or profession demands depth perception, not obtainable unless the aniseikonia is corrected. I can think of dentists, surgeons, engineers and artists and you can no doubt think of others. Also it is not at all improbable to me that compensation laws may be modified by your recently acquired knowledge in this field because those individuals who have monocular aphakia as the result of an injury sustained to the lens while at work may now by means of the proper iseikonic lens secure comfortable binocular single vision with depth perception.

There are many types of differences in the size and shape of the

ocular images. The most frequent are: (1) The ocular image of one eye is symmetrically larger or smaller over all than that of the other, (2) the ocular image of one eye is symmetrically larger or smaller in one meridian than that of the other, (3) the ocular image of one eye is symmetrically larger in one meridian and smaller in the other meridian than that of the fellow eye. The differences are expressed in per cent.

A patient whose symptoms are referable to aniseikonia may have one, several or all of the following complaints: photophabia, train and car sickness, movie fatigue, indifference to or dislike of reading, inability to read for a period of time, dizziness, gastro-intestinal disturbance, headaches, ocular pain and blurring of vision.

Aniseikonia is almost always present when there is anisometrapia, but exists in many cases when little or no refractive error is present. Such cases are often diagnosed as neuroses since there is no obvious cause for the disturbance of which the patient complains. In absence of our opportunity at present to test for aniseikonia, I can suggest the following procedure which may indicate whether or not the patient's symptoms are due to a probable aniseikonia. If the refractive error and muscle imbalance, have been corrected by glasses and the patient's complaints are not alleviated, one eye is to be occluded constantly for a period of several weeks by any desirable and adequate method.

If there is a definite alleviation of the symptoms it may be warranted to send such a patient to a center where aniseikonia is measured and corrected for a more detailed study of this particular phase. If with one eye covered constantly for several weeks the symptoms persist aniseikonia is not the causative factor.

Several types of lenses have been devised to correct the disparity in the size of the ocular images. There are "size-lenses" which change the size of the ocular image without affecting the refraction. There are "power-lenses" which combine size changes of ocular images with refractive power. If one has to deal with size corrections above 5 per cent it is necessary to use the telescopic principle of lens construction for the correction.

The subject of iseikonic correction is new but its value and practical importance has been already demonstrated on many occasions. Many questions still remain to be answered and many refinements to be worked out. The progress to date has been most encouraging. I do not want to leave the impression that I advocate the use of iseikonic lenses by all those who show a difference in ocular size image, for many of these individuals compensate for these differences, if slight without symptoms. I believe that a simple instrument will be devised in the near future which will accurately estimate the difference in the size of ocular images. When this has been accomplished, I predict that such tests will become a routine office procedure. When this becomes an accomplished fact there

will have been added another important advance to a specialty whose past is so rich with accomplishments.

I would like to cite a case, briefly, pertaining to this subject, which occurred on our practice. RS., a female, age 20, sustained a laceration at her right cornea near the limbus at 7 o'clock, and another laceration at 11 o'clock. The iris prolapsed in each one and the lens was opaque and no red reflex was seen. The prolapsed iris was replaced and a conjunctical flap was brought over. On the fifth day the purse-string suture was removed and the conjunctiva was allowed to go back in place. Six months later following a needling, her corrected right vision was 2.0-2. The ocular image size difference was found to be 40 per cent. An iseikonic lens correction for this size difference and having the correct refractive power for near was ordered, secured and worn. This enables the patient to readily secure stereoscopical vision with its attendant benefits.

Dr. Strickland: Cosmetically speaking, I don't think it is a very happy result, but she depends for her livelihood on piece work. It all depends on her efficiency, and her efficiency depends on her binocular single vision. As I stated before, this lens has to be made on a telescopic principle but if the difference is less than five per cent you can't tell it from an ordinary lens. This glass is made only for near vision.

Are there any questions you would like to ask?

Dr. H. C. Wolfe (Greensboro): How did she happen to get two injuries at different times?

Dr. Strickland: Well, she had a tube in each eye. She went down to the kitchen, struck the corner of a table, broke a glass, and cut the cornea in two places.

Dr. Wolfe: I see. You were giving the position on the eye. I was wondering how she could get two injuries at two different times.

Dr. Strickland: No, she got both injuries at the same time.

Chairman Griffith: She uses both eyes perfectly comfortably?

Dr. Strickland: For near.

In the operation that she used to do on a full-fashioned machine, every eight minutes she had to get up and go across a room. Of course, this glass being made for near, it bothered her a lot because she had to take them off and put them on again. She now sits in one place all day long. She doesn't have to move and it doesn't bother her.

Dr. W. M. Hollyday (Asheville): Does she have any diplopia when she looks other than through the center of the lens?

Dr. Strickland: The lenses have to be bent forward. This lens, if you look at it carefully, is bent at this angle. If it is straight she does get diplopia, because, as yet, there is no way to incorporate a prism in

that lens. Of course, the iseikonic lens is put over her good eye to increase the size of the energy up to the one that the cataract lens gives her.

Dr. E. Prefontaine (Greensboro): Is her near correction in those iseikonic glasses the same as her distant correction?

Dr. Strickland: The same as her distant correction, minus two incorporated in the iseikonic lens, but her cataract lens is a near glass.

Chairman Griffith: Is there any other discussion of this paper? If not, do you have anything further to say, Doctor?

Dr. Strickland: No, thank you very kindly. (Applause.)

Chairman Griffith: The next paper on our program is that of Dr. Henry Sloan, "Intraocular Changes in the Toxæmias of Pregnancy."

Dr. Sloan!

Dr. Sloan presented his prepared paper.

CONCERNING INTRAOCULAR CHANGES IN THE TOXAEMIAS OF PREGNANCY, A REVIEW

Henry L. Sloan, M.D.
Charlotte, N. C.

The changes to be observed in the fundus oculi in disease are often of great diagnostic and prognostic significance. A review of recent medical literature discloses some very valuable clinical observations, made by ophthalmologists in this country and abroad, as to the significance of the intraocular changes to be seen in the toxæmias of pregnancy. These clinical studies have been made with the ophthalmoscope and the findings have been set down in chronological sequence and in simple understandable words. These pathological processes have, moreover, been visualized by means of fundus photography and artists' drawings. Their findings have been checked and confirmed so that we now have records which have led to the simplification and understanding of the early and advanced changes which were formally misinterpreted, and they give a contrast with blood pressure changes and other clinical laboratory aids. These studies place at the disposal of the obstetrician information of definite prognostic importance if he will observe carefully at frequent intervals the retinae during pregnancy.

McCord, chief of the obstetric staff of the Grady Hospital in Atlanta, gives as his opinion that the study of the eyegrounds by an experienced individual affords the most information as to the course of the toxaemias of pregnancy.

Except in rare instances it is known that the severity of the toxaemias run pari passu, with the height of the blood pressure. However, the percentage of intraocular changes more closely follows the severity of the toxaemia than any other single laboratory or clinical sign (Hallum).

Wagener and Mussey studied the fundus oculi of 108 patients who had hypertensive toxæmia of pregnancy and found that in 72 per cent of the cases in which the blood pressure was 140 mm of mercury or more, there was positive evidence of change in the retinal arterioles, or in the retina proper.

In a study of 300 cases of toxemia of pregnancy made by Hallum three years ago, definite changes in the eyegrounds were found in 76 per cent of the cases. Hallum divides his cases, according to the severity and duration of the toxaemia, into three groups. Group 1 included those patients whose blood pressure before delivery did not exceed 150/110; group 2 included those with blood pressure ranging from 150/100 to 175/125; and group 3 included those with pressure above 175/125. Eyeground changes occurred in 41 per cent of group 1, in 84 per cent of group 2, and in 98 per cent of group 3. However, in a more recent study eyeground changes have been found in about 95 per cent of cases including all degrees of hypertension.

In Hallum's cases, urinalysis was done on 280 patients and 59 per cent showed albuminuria of some degree. Albuminuria was found in 46 per cent of patients in group 1, in 63 per cent of groun 2, and 68 per cent of group 3. Thirty-two per cent of group 3 showed no albuminuria.

Phenolsulphonphthalein excretion test, done on 121 patients, showed a normal output in more than half of the number, regardless of the severity of the hypertension or the type of the toxaemia.

The nonprotein nitrogen and creatinine content of the blood was determined in 72 of the more severe cases, and retention of these substances was present in only 5.6 per cent.

Forty patients showed an abnormal gain in weight during the last three months of pregnancy, but only 7.5 per cent had severe hypertension.

According to Hallum, the first change observed with the ophthalmoscope is usually a slight generalized constriction or narrowing of a single artery, or a branch, or of all the retinal arteries. Not infrequently the first change noted is a single constriction or a series of constrictions, usually in the larger branches of the central artery. As the severity of the toxaemia increases, the amount of arterial constriction, both general and local, becomes greater. Gibson, of Philadelphia, asserts that most of the spasms occur in the terminal arterioles. Hallum, in a personal communication, says that he has studied about 1,500 cases of hypertensive toxaemia of pregnancy, and he is certain that most of the spasms are seen in the arteries near the disc. Bedell agrees with the statement of Hallum.

The arterial constrictions are, for the most part, spastic in nature. In such cases there is no enlargement of the arterial reflex stripe, and no arterovenious compression. The amount and degree of constriction

varies from day to day, and the arteries resume their normal calibre of the blood pressure returns to normal before sclerotic changes develop in the arterial walls. Hallum found that of the positive changes in the eyegrounds, 62.5 per cent were limited to the arteries alone.

The normal ratio of vein diameter to artery diameter is about 3 to 2. In severe cases this ratio increases to the point where it may become 5 to 6 to 1, together with localized variations in calibre.

Mussey, from a careful study of a group of patients with severe hypertension, found that 87.5 per cent of the eyeground changes were severe. He further points out that these changes in the arterioles of the retina go along with the height of the blood pressure.

Peckham (quoted by Mussey) noted that the incidence of chronic nephritis following preëclamptic toxaemias was influenced directly by the height of the blood pressure and the duration of the toxaemia. In a series of cases which he reported, he observed that chronic nephritis did not develop subsequently among patients whose systolic blood pressure remained less than 170 mm of mercury during the acute toxaemia of pregnancy. When the blood pressure ranged between 170 and 200 nephritis developed in 15 per cent of the cases, and when the pressure was more than 200, there was evidence of nephritis in 48 per cent of the cases.

Edema of the retina is the next change to occur, according to Hallum. He observed that it makes its appearance at the upper and lower poles of the discs and spreads out along the course of the blood vessels. It may be difficult to recognize in its early stages, but when well established the retina appears swollen, grayish or milky in color, and tends to envelop the retinal vessels. Hallum found arterial changes accompanied by edema of the retina, accounted for 21.9 per cent of the intraocular changes.

The third and most serious change in the fundus oculi is the appearance of hemorrhages and exudates. The hemorrhages are usually in the superficial nerve fibre layer and are therefore flame-shaped. They occur usually near a vessel, and usually in the posterior third of the fundus. The cotton-wool exudates have a similar distribution. Star-shaped figures of the macula rarely occur, and then only when advanced arteriosclerosis or a very diffuse retinitis is present. Retinitis accounted for 14 per cent of the eyeground changes in Hallum's 300 cases. Wagener, Mussey, Bedell, and others have described similar changes in the eyegrounds of toxaemia cases.

How much more definite and understandable are these very clearcut changes than the old term "albuminuric retinitis"?

Mylius stated his belief that retinitis developed as a result of the passive congestion in the venous capillary loops secondary to the tonic arterial constrictions. Freidenwald says "The vessels primarily affected are the terminal or precapillary arterioles, and the retinal lesions are

in essence minute foci of necrosis, edema and hemorrhage dependent on vascular occlusion."

Detachment of the retina, usually bilateral, is a rare complication of pregnancy. It does not require operation, and clears up usually in about ten days or two weeks after interruption of pregnancy. If the detachment occurs as a part of a general retinitis, the outlook for the mother is the same as in retinitis without detachment. However, there is more likelihood of permanent damage to the vision. In such cases subretinal edema seems to be the cause of the detachmnt. In a few cases retinal detachment occurs without signs of retinitis. It is caused by subretinal exudation of a serous fluid which apparently comes from the choroid. The retina rapidly becomes reattached after the termination of pregnancy, and very good vision returns. These primary retinal detachments do not have the same serious prognosis with regard to the mother's vascular system. Prompt termination of pregnancy is indicated, for if the detachment persists great damage will result to the vision.

Evidence has been established to prove that the same changes seen in the retinal arterioles of the toxaemias are present in the arterioles throughout the body. It is then a general vascular disease. Arteriolar spasms have been observed in the precapillary loops of the nail bed, and in microscopic study of the arterioles from a biopsy of the pectoral muscle in cases of toxaemia. Through autopsies similar vascular disease has been demonstrated in the heart, renal glomeruli, lungs, brain and the liver. The toxaemia must not be permitted to continue for long. It is not known just how long angiospastic changes may persist without angiosclerosis. Wagener affirms that "When diffuse retinitis has developed as a result of arteriolar spasm, organic injury to the retinal and systemic arterioles will always be present. This is the reason for the prevalence of chronic nephritis or persistent hypertension among toxaemic patients who have retinitis."

If nephritis is allowed to develop during pregnancy it probably means that the mother's life has been cut short. Standner found, in a follow-up of 800 cases of toxaemia, that 35 per cent had chronic nephritis, and that 40 per cent of these were dead in 5 to 7 years.

Bedell, Hallum, Wagener, Mostus and others agree that the uterus should be emptied upon the first appearance of hemorrhage or exudate in the retina. Herrick adds that, if nephritis is present, abortion must be more seriously considered than if toxaemia is of vascular origin.

Prompt interruption of pregnancy, upon the first appearance of hemorrhage or exudate, is imperative in order to prevent irreparable damage to arterioles. If the fetus is viable much is lost by waiting. When the retinitis develops before viability, according to Wagener and others, and pregnancy is allowed to continue for several weeks in the hope of obtaining a viable fetus, the chance of accomplishing this is too slight to justify the risk of increased injury to the vision and to

the cardio-vascular system of the mother. Shiotz observed 17 patients who had retinitis before the 28th week of pregnancy, and only 4 were delivered of living babies; 16 of these had subsequent hypertension. In Master's series, 13 patients had retinitis before the 28th week of pregnancy; only 4 of his cases had living babies; 13 had residual hypertension. Wagener observed 7 patients with retinitis before the 28th week; only 1 of these had a living baby; all 7 had residual hypertension. Only 1 of Wagener's 7 cases had hypertension before pregnancy.

As to this phase of the subject, Wagener concludes that if retinitis develops before the 28th week, there is only about 25 per cent chance of obtaining a living baby, even if the pregnancy is continued to the stage of viability; and there is almost 100 per cent risk of permanent cardio-vascular renal injury to the mother.

Aside from the intraocular changes described above, rarely we find other ocular complications of such serious import as to call for therapeutic abortion. Included in this group are optic neuritis, vitreous hemorrhages, retrobulbar neuritis, and eclamptic amaurosis, all of which are indicative of a severe toxaemia. Wagener regards optic neuritis as a terminal condition. The outlook is hopeless with or without abortion.

Conclusion

Very definite intraocular changes do occur in almost every severe case of toxaemia of pregnancy. Careful observation of the fundus oculi of such cases probably offers the greatest single aid to the obstetrician in the management of these cases.

The development of retinitis in any case of hypertensive toxaemia of pregnancy is an urgent indication for the termination of pregnancy, in order to prevent not only damage to the vision of the mother, but also serious damage to the maternal general vascular system. Careful search should be made from day to day for angiospastic changes in the retinal arteries. It would seem that this, because of the time element, must be done in the main by the obstetrician, who must make himself efficient in the use of the opthalmoscope.

References

[1] McCord, J. R.: Conservative Treatment of Eclampsia. Jour. Med. Soc. N. J., 34: 9-11 (Jan.) 1937.

[2] Hallum, A. V., Atlanta, Ga.: Eye Changes in the Management of Hypertensive Toxemia of Pregnancy: A Five-Year Study. Sou. Medical Jour. (Jan.) 1938.

[3] Hallum, A. V.: Eye Changes in Hypertensive Toxæmia of Pregnancy. J.A.M.A., 106: 1649-1651 (May 9) 1936.

[4] Wagener, H. P.: Arterioles in Toxæmia of Pregnancy. J.A.M.A , 101: 1380 (Oct. 28) 1933. Wagener, H. P.: Lesions of the Optic Nerve and Retina in Pregnancy. J.A.M.A., 103: 1910-1913 (Dec. 22) 1934.

[5] Mussey, R. D.: The relation of Retinal Changes to the Severity of the Acute Hypertensive Syndrone of Pregnancy. Amer. Jour. Obst. & Gynec., 31: 938 (June) 1936.

[6] Davis, W. T.: Ophthalmological Findings in Cardiovascular Renal Disease. Surg., Gynec. & Obst., 64: 546-551 (Feb.) 1937.

[7] Norton, J. F., and Connell, J. N.: Management of Toxæmias of Pregnancy. Jour. Med. Soc. N. J., 33: 499-501 (Sept.) 1936.

[8] Schiotz, quoted by Bovenmyer, D. O.: Intra-ocular Lesions Associated with Pregnancy and their Prognostic Significance. Jour. Iowa Med. Soc., 26: 670-674 (Dec.) 1936.

[9] Stander, quoted by Norton, and Connell.

[10] Herrick, W. W., and Tillman, A. J. B.: Toxæmia of Pregnancy; Its Relation to Cardiovascular and Renal Disease. Arch. Int. Med., 55: 643-664 (April) 1935.
[11] Herrick, W. W., and Tillman, A. J. B.: The Mild Toxæmias of Late Pregnancy. Amer. Jour. Obst. & Gynec., 31-832 (May) 1936.
[12] Herrick, W. W.: Phases of Cardiovascular and Renal Disease Indicating Abortion. J.A.M.A., 103: 1902-1906 (Dec. 22) 1934.
[13] Masters, Robert J.: Routine Ophthalmoscopic examination as An Aid in the Management of Maternity cases. Trans. Am. Ophthalmol. Soc., xxxi:416, 1933.
[14] du Toit, J. S.: Eye changes During Pregnancy, with Special reference to eclampsia. So. American Med. Jour., ix: 559 (August 24), 1935.
[15] Stander, H. J.: Hemorrhagic retinitis in vomiting of Pregnancy. Surg., Gynec., and Obst., liv: 129 (Feb.) 1932.
[16] Bergmann, Milton Blaine: Relationships between Ophthalmology and Obstetrics. Am. Jour. Ophthalmol., xvii: 141 (Feb.) 1934.
[17] Bruce, Gordon M.: The eye in eclampsia. Am. Med., xxviii: 6 (August) 1933.
[18] Wright, R. E., Nayar, K. Koman, and Nayudu, T.: Vencatarangum: Disturbances of the Visual apparatus in the Toxæmias of Pregnancy associated with Eclampsia or the Pre-eclamptic State. Brit Jour. Ophthalmol., xix: 19 (January) 1935.
[19] Selinger, E.: Retinal Angiospasm in Pregnancy. A. J. Ophthal., Jan. 1937, pp. 56-60.
[20] Friedenwohl, J. S.: The Pathogenesis of Albuminuric Retinitis. Libman Anniversary Volumes, New York. International Press, 1932, v. 2, p. 453.

Dr. Henry Sloan: I would now like to show two slides. I had some other slides that were supposed to come up from Atlanta, Georgia, but they haven't reached me, and I apologize for that. So far, they aren't here. I have two of Dr. Hallum's slides. I am afraid, though, they are not going to show up. They can't be seen. I regret it.

Anyway, that is a picture showing the narrowing of the arteries and localized constriction, which is your first stage. I would like for you to look at these drawings. They are very interesting, and it just fits into the picture of albuminuric retinitis, in its integral parts. It shows you what really happens, explains the pathology. You first have the narrowing of the blood vessels and the constriction of the blood vessels, and this interferes with the circulation. You get a passive congestion in the capillary loops, and then your edema supervenes, which is your second stage in albuminuric retinitis, and this edema spreads out along the course of the blood vessels from the upper and lower margins of the disc. Your next step is exudate and hemorrhage, and when this occurs, the probability is you have already done permanent damage to the arteriolar system of the body. If you don't interrupt pregnancy at the first sign of this hemorrhage and exudate, you have done permanent damage to the mother's general vascular system.

To me, this is a fascinating thing because I never have understood what albuminuric retinitis was. I never could split it up before. I never understood the steps. But this seems to have simplified it, and the work has been done by these men, Hallum and Wagener, at the Mayo Clinic. Myelitz first called attention to it in 1928. To me, it is a very interesting thing, and I think the ophthalmologists have done something to help in this very important subject. (Applause.)

If any of you want to see these slides, I think you can see them very well by holding them up to the light.

Chairman Griffith: Dr. A. Sloan's paper is open for discussion.

Dr. Henry H. Briggs, Jr. (Asheville): I want to take this opportunity of thanking both Dr. Strickland and Dr. Sloan for reading these

papers. Each of them didn't want to read a paper when I asked them to several months ago. For some reason, our men did not respond very well when we asked them to read papers. Just a few weeks ago I asked Dr. Sloan and Dr. Strickland if they would please help us out by presenting papers, which they have done.

Dr. Sloan's paper interests me very much.

I want to ask this in the way of a question: Don't we get these same vascular changes in a person who is not a pregnant person, in certain grades of arteriosclerosis on even to the malignant hypertension, with edema and all?

Also, Dr. Sloan used the words "albuminuric retinitis," as if they described a certain group, more or less, of vascular change. I have never gotten that straight in my own mind, as to whether there is (this is, of course, from reading, not actual experience) such a thing as albuminuric retinitis, because the changes in malignant hypertension are just the same in other cases as in the albuminuric retinitis cases.

I wish to thank both these men again.

Chairman Griffith: Is there any further discussion of Dr. Sloan's paper? If not, Dr. Sloan, would you like to reply?

Dr. Sloan: I think the answer to Dr. Brigg's question is that—I was just trying to say what albuminuric retinitis is. It is represented by this narrow restriction of the blood vessels, passive edema and then exudate. I think it occurs in other conditions, of course, just as well as the toxemias of pregnancy.

Dr. Briggs: Can you tell an albuminuric retinitis, without knowing the history of the patient, by looking at the eyeground?

Dr. Sloan: No.

Chairman Griffith: Our next paper is that of Dr. G. B. Ferguson of Durham, entitled, "Streptococcus Laryngitis."

Dr. Ferguson presented his prepared paper. (Applause.)

STREPTOCOCCUS LARYNGITIS

George B. Ferguson, M.D.
Durham, N. C.

Until recent years, most cases of infectious laryngeal dyspnea in children were attributed to diphtheria. Now, however, direct laryngoscopic and bronchoscopic examination, coupled with bacteriologic study, is proving many of these cases to be non-diphtheritic in origin. Of this non-diphtheritic group, streptococcic infections constitute by far the greatest number. For this reason, the term streptococcus laryngitis has come to be applied to the entire group of non-diphtheritic in-

fections, although staphylococci and bacillus influenzae have been reported in a small percentage of cases.

It is difficult to estimate the comparative frequency of laryngeal diphtheria and streptococcus laryngitis. Undoubtedly, many streptococcic infections are wrongly classed as cases of laryngeal diphtheria. In 1932, T. R. Gittins[1] reported a series of forty-one cases of infectious laryngeal dyspnea. Twenty-four cases, or 58 per cent of this group, were streptococcic infections, and seventeen, or 42 per cent, were true laryngeal diphtheria. Fifteen of the twenty-four streptococcic infections were so severe as to require tracheotomy; of these, eight died and seven recovered, a mortality rate of 53 per cent. Tracheotomy was performed on sixteen out of the seventeen diphtheria cases, with the result that six died and ten recovered, a mortality rate of 37 per cent. Although this is a small number of cases on which to base any conclusions, it should point out two things. First, that streptococcic infections constitute a large percentage of all cases of infectious laryngeal dyspnea, and second, that infectious laryngeal dyspnea, whether diphtheritic or non-diphtheritic, is a very serious problem.

In a series of cases reported by William L. Bradford,[2] in which the ages of the patients varied from five months to thirteen years, the viridans type of streptococcus overwhelmingly preponderated in the cultures of the non-diphtheritic patients. W. C. Davison, on the other hand, in his book *The Compleat Pediatrician,*[3] reports hemolytic streptococcus to be present in approximately 92 per cent of the cases observed by him. Dyspnea, incidentally, which is not infrequent in children because of the disproportionately small size of the child larynx, is a rare complication of streptococcus laryngitis in adults. For this reason discussions of the disease are usually limited in subject to children under fourteen years of age.

Streptococcus laryngitis is usually preceded by a period of three to four days, or more, of generalized respiratory infection. Gradually a "croupy" cough develops, sometimes accompanied by hoarseness. Until the onset of laryngeal dyspnea, with its train of alarming symptoms, the patient is usually believed to have an "acute cold." With the onset of the dyspnea, however, the breathing becomes labored and noisy. The accessory muscles of respiration are called into play, and their increasingly forceful contractions produce a strongly negative intrathoracic pressure, with an indrawing of the soft tissues in the suprasternal notch, the epigastrium, and the intercostal spaces. Since the voluntary muscles must function in order to maintain adequate aeration, sleep becomes impossible. The child may doze fitfully due to exhaustion, but soon awakens to struggle for air. Food and fluids are refused, or taken with greatest difficulty. As the obstruction increases, there is expiratory as well as inspiratory dyspnea—a distinct warning and a valuable sign. The dyspnea may vary in intensity almost from minute

to minute, depending upon the position of thick secretions in the larynx, trachea, and bronchi. Dyspnea is frequently relieved by a violent fit of coughing, only to return as the larynx becomes obstructed by tenacious pus. Cyanosis appears only when the child becomes exhausted. There is almost always a period of from twelve to thirty-six hours of obvious and increasing obstructive dyspnea before collapse occurs. Relief should not be delayed, however.

A foreign body in the trachea, lodging in the subglottic larynx, may produce these symptoms also. This possibility may be ruled out by a careful history, X-ray, and bronchoscopic examination.

Although the fever and white count are often lower in laryngeal diphtheria, the clinical manifestations may be precisely those enumerated for streptococcic infections. Therefore unless, as happens rarely, a typical diphtheritic membrane covers the fauces, where it is easily visible, the differential diagnosis must be made by direct laryngoscopic examination and bacteriologic study. The laryngoscopic examination shows a clear cut difference between the two conditions. In laryngeal diphtheria a whitish-gray membrane extends over the vocal cords and may line the trachea and bronchi. In streptococcic infections, however, there is no membrane formation; the main findings are a marked subglottic edema, and inflammation of the trachea and bronchi, with considerable thick tenacious pus. The vocal cords are only slightly involved in this inflammatory process.

It is obvious that any case of laryngeal dyspnea should be treated in a hospital. Diphtheria anti-toxin should be given when there is doubt of the etiology. The milder cases may subside with general treatment. Fluids should be forced, as this tends to thin the tenacious secretions and facilitates their expulsion. The respired air should be warmed and moistened; occasionally, direct laryngoscopic aspiration of secretions from the tracheobronchial tree may be a definite aid.

Frequently, tracheotomy is required. Intubation has undoubtedly a definite field of usefulness in relieving the dyspnea of proved cases of laryngeal diphtheria. Unless, however, a definite membrane formation is present, or unless the throat culture is positive for diphtheria bacillae, it is better to do a tracheotomy, because a tracheotomy tube cannot be coughed out, it does not invite laryngeal stenosis, and it provides a "drainage-tube" for the lung. The best indications that a tracheotomy is necessary are:

(1) Marked indrawing, (2) Inability to sleep, (3) Inability to eat, (4) Expiratory, as well as inspiratory dyspnea.

It is our custom to perform a tracheotomy after a bronchoscope has been inserted. This has several obvious advantages:

(1) It relieves the dyspnea and allows time for an orderly dissection. (2) It rules out non-opaque foreign bodies that may have been overlooked at X-ray examination. (3) It allows thorough aspiration of

tenacious secretion. A specimen may be taken for bacteriologic study. (4) It permits oxygen to be administered if needed. (5) It acts as a guide to the trachea.

The child is placed on a table with a small sand pillow under the shoulders to throw the trachea forward. After the skin is prepared for operation, one-half per cent novocaine solution is infiltrated into the mid-line of the neck, from the larynx to the supra-sternal notch. (Local anesthesia is necessary, since a general anesthetic paralyzes the accessory respiratory muscles and may cause death.) An incision is made along this line, through the skin and superficial fascia. Blunt dissection then separates the ribbon muscles and exposes the trachea. The isthmus of the thyroid gland is usually cut through, and the ends secured by suture ligature. All other bleeding points are also tied off. The cricoid cartilage, which is the only complete ring in the larynx and trachea, must not be cut. A longitudinal incision is made in the second tracheal ring, a blunt-point bistoury is introduced, and the third and fourth rings are cut. A tracheotomy tube of suitable size is then inserted, and the wound left unsutured.

Since the most critical period of the entire illness is that directly following tracheotomy, the after care of the tracheotomized patient can not be emphasized too much. Constant vigilance on the part of both doctor and nurse is essential. The outer tube is not removed for the first forty-eight hours unless a change is absolutely necessary, after that it is changed daily. The inner tube is removed and cleaned at half hour intervals. Secretions are aspirated from the trachea and bronchi by means of a catheter attached to a suction machine. Aspiration may be necessary as often as ever five or ten minutes; it must be sufficiently frequent at least, to keep the air passages clear. Secretions have a troublesome tendency to become dry and form plugs. This must be prevented. Sterile water, instilled into the tube, is very helpful in liquefying thick pus, it being frequently necessary to instill five drops every half hour. A high fluid intake should be maintained during this stage, with the amount taken by mouth supplemented by hypodermoclysis. Blood transfusions are very valuable in building up the child's resistance. Sulfanilamide should prove helpful in cases of hemolytic streptococcus infection.

The importance of constant care and frequent aspiration for the first few days following tracheotomy, is brought out by a report made in 1930 of four cases which clinically resembled laryngeal diphtheria but were due to staphylococcus aureus. In three of the four cases the laryngeal obstruction was serious enough to require tracheotomy. Following tracheotomy, this note was made in each instance, "Relief was obtained, but signs of obstruction again appeared, the child's condition became worse, and death occurred a few hours later, apparently from suffocation and cardiac failure." In the last of the three cases, this note is made,

"these attacks of obstruction with convulsive spasms, which were apparently relieved by cleaning the trachea with an oiled feather came on at intervals until death occurred. . . . " Another author from the same locality, writing upon this same subject, stated, "Of one thing I am convinced, and that is that tracheotomy does not relieve the respiratory distress one iota. This was done on several occasions and no benefit whatever resulted." In the light of recent experience it is easily seen that where the tracheotomy itself was an obvious success, the method of post-tracheotomy care was at fault.

Conclusions

1. It must be remembered that approximately 50 per cent of the cases of infectious laryngeal dyspnea in children are due to streptococcic infections. Valuable time may be lost waiting for diphtheria anti-toxins to relieve them.

2. Differential diagnosis depends on direct laryngoscopic examination and bacteriologic study.

3. Intubation should be done only in proved cases of diphtheria.

4. In all other cases tracheotomy should be done early. The after care should be entrusted only to nurses specially trained in this type of work.

5. Even the milder cases require hospitalization and close supervision. Early, intelligent care can further reduce the very high mortality rate.

[1] Gittins, T. R.: Laryngitis and Tracheo Bronchitis in Children; Special reference to non-diphtheritic infections, Ann. Otol., Rhin. & Laryng. 41:422-438 (June) 1932.

[2] Bradford, W. L., and Leahy, A.D.; Acute Obstructive Laryngitis; Clinical and Bacteriologic Study in 66 cases. Am. J. Dis. child. 40:298-304 (August) 1930.

[3] Davison, W. C.: The Compleat Pediatrician, 2d ed., Durham, N. C., Duke University Press, 1938.

Chairman Griffith: I will ask Dr. Hart to open the discussion.

Dr. V. K. Hart (Charlotte): Mr. Chairman, I don't believe there is a great deal that I can add to the essayist's paper. He has covered the subject very thoroughly. He has stressed the proper points. I can only re-emphasize some of the things that he has said. I might disagree with him on one or two minor points, but they would be matters of technique only and of no consequence.

First, direct laryngoscopy: I think this is of the utmost importance in any dyspnea. We make it a routine in our own clinic to do a direct laryngoscopy on every case of inspired dyspnea admitted. This allows, of course, as the author has emphasized, direct visualization and the taking of direct cultures.

Second, the etiology: It is true that as a rule we can look at a larynx on direct vision and make a fairly accurate guess as to whether or not this is specific. I would disagree a little with Dr. Ferguson in this respect: that there are some cases of these non-specific infections which have a pseudo-exudate because of which it is quite difficult to make a

clean cut distinction sometimes. But I grant that as a rule the distinction can be quite readily made.

I would also emphasize, whereas a large percentage of these cases are of streptococcic origin, that if a long series were run I don't think it could be said that ninety per cent will be hemolytic Streptococcus or hemolytic viridans. I think either one may be operative. It has been so in our cases, and often you do have a mixed infection.

As to the dyspnea, it seems rather difficult to bring some pediatricians to the realization that when a child reaches a certain point of exhaustion, because of inspiratory dsypnea, particularly with a yocardium that is beginning to be taxed, there should be no hesitation whatever as to tracheotomy. When in doubt, I say operate. There can be no harm from a properly performed tracheotomy, but there can be tremendous harm from one for which we wait too long.

I also find this to still be true, and I am plagiarizing to some extent, because this was emphasized long ago, as Dr. Ferguson knows, by the Jackson School: the danger of giving narcotics to these children when in the period of dyspnea because it represses a respiratory center already taxed, because it thickens the secretions—and your secretions are already sticky and scanty—and because it masses the symptoms. After you have relieved the obstruction, your narcotic may be invaluable to a myocardium which is taxed because then rest is of the utmost importance.

Also, post-tracheotomic care: Again, the author has very properly emphasized that. It is rather startling to have operated on a patient and then turn and find an inexperienced nurse who is taking out a cannula and your patient is unconscious and gasping for breath, again with an inspiratory stria. In teaching student nurses, I greatly emphasize the importance of the recurrence of stria after tracheotomy is done, because it is particularly apt to happen in these non-specific cases, and, as has been brought out in the paper, you get these thick inspissated crusts. Many times it is a lifesaving measure in an emergency to take a whole dropperful of sterile mineral oil, or quite a few times, where a child was about to expire, I have taken up a whole dropperful of adrenalin, dropped it into the cannula, then rapidly aspirated with a catheter, repeated, and pretty soon I would get out one of these crusts.

I would emphasize another point which I think is of great clinical significance, and one which was emphasized by Tucker in the *Southern Medical Journal* several years ago. You see a child with inspiratory dyspnea. The child is operated on. You see the child again twenty-four or forty-eight hours later, and the child is cyanotic, but now with an expiratory dyspnea, not inspiratory but expiratory, typical asthmatic respiration. That is pathognomonic of a bronchial obstruction, and if you will do bronchoscopy on these cases you will find your bronchi obstructed

either with crusts, or a very much swollen, thickened mucous membrane with adherent exudate. To aspirate these patients rapidly, swabbing the mucous membrane with adrenalin, and putting in a little oil is often very helpful, and often bronchoscopy must be repeatedly done, although this is the exception, when the need arises again as the essayist has said. And I am only emphasizing what he has said, that we should not hesitate to repeat it as often as necessary.

Some of these children have been reported. I heard of one in Atlanta three months ago, where a man had done fifty bronchoscopies and the child ultimately got well. Of course that is the exception and not the rule.

One final word as to pathology: I heard a very nice paper by Dr. Lyman Richards of Boston three months ago, Dr. Ferguson, in which he had some beautiful sections of the postmortem findings in these children, which interested me very greatly, and I am sure they would interest you. They illustrate what happens in death, showing the varying areas of atelectasis and emphysema. In one area you are getting trapped air, in another area you are getting no air at all, with atelectasis, which again illustrates the great importance of keeping these air ways open.

Thank you. (Applause)

Chairman Griffith: Is there any further discussion of Dr. Ferguson's paper? If not, Dr. Ferguson, will you close, please?

Dr. Ferguson: I think there is one point Dr. Hart brought out there about the variation in reported series of cases, one reporting hemolytic Streptococcus predominating and the other reporting the viridans type. I believe that this may vary from year to year, or from locality to locality, much as the pneumonias will vary in one section of the country from those found in another. Probably that accounts for a good portion of this variation in the reported series of cases.

I know that most of our cases have been mixed infections, or at least a great many of them have been, with no definite statistical data as to any high percentage favoring one group or the other. (Applause.)

Chairman Griffith: Our next paper is that of Dr. M. R. Gibson of Raleigh, entitled, "The Otorhinolaryngologist Role in the Treatment of Bronchial Asthma."

Dr. Gibson! (Applause.)

Dr. Gibson presented his prepared paper. (Applause.)

THE RHINOLARYNGOLOGIST ROLE IN TREATMENT OF BRONCHIAL ASTHMA

N. R. Gibson, M.D.
Raleigh, N. C.

My interest in the treatment of asthma was aroused four years ago by Dr. Burton Haseltine of Chicago, with whom I was working for awhile. Dr. Haseltine had been treating asthma at that time along the line I shall mention, for twenty-five years, and obtaining good results. After he had reviewed with me many of his cases, and had me meet some of his patients, whom I interviewed, I was very much impressed with his method of treatment. The reason why one should expect good results from this treatment, which was new to me, but well tried by Haseltine, was explained to me, and I could see sense in it. The more I have studied, the more I have been impressed with the reasonableness of the treatment, and the results I have obtained have proven to me the correctness of the procedure for the cure of asthma. I doubt there is a doctor present that has not relieved some patient of asthma by some rhinolaryngological surgery or treatment, regardless of how short a time he has been practicing, and some have felt so much encouraged that they entertained the idea that cures could be obtained in most cases by surgical work done by the rhinolaryngologist. Some of these cases were benefited, in fact cured, but in many cases there was only disappointment for both the doctor and the patient.

The set-up for successful treatment of asthma must be a well-trained internist, especially trained for the work and one that can correlate his pathological findings to asthma and a rhinolaryngologist who must also be especially trained and understand what relationship his pathological findings may have to the existing asthma. It is essential to have such a combination if there is to be successful treatment. There are so many things that contribute to the cause of asthma that a most careful study of the case must be made, and a note made of every abnormal condition, with the view of correcting each of those that may contribute to the condition that has caused the asthma. This is a job and a big one, and it may be necessary for specialists in fields other than the rhinolaryngology and internal medicine to study the case. There will be work for the genito urinary man, the gynecologist, gastro enterologist, and the surgeon, in many of the asthma cases.

Having told you of the type of organization that may effect the best results, I wish to suggest that the most thorough coöperation with one another is necessary if the results, that are obtainable, are gotten. Both the internist and rhinologist must carefully re-examine and treat the patient throughout the course of treament, which may last for months, for without these re-examinations neither the progress of the case is

known, nor is it known when treatment, other than that which was indicated primarily, is needed.

I shall review at this time sufficient anatomy to remind you of the relationship of the nose to the lungs: the reflex arc between the mucous membrane of the nasal cavity and the muscalature of the bronchial tree.

Haseltine says "Anatomically there is a neurologic connection between the sensory nasal structures and the bronchiolar musculature. They may occur through either the opthalmic or superior maxillory division of the trigeminus, either with or without a relationship to the spheno-platine ganglion. Through the sensory root of the trigeminus, by means of collaterol neurous of the second order, a synaptic relationship is established with the motor neurous of the vagus muclei, which send efferent impulses to the musculature of the respiratory passages." The above quotation is substantiated in the anatomies of Gray, Piersol, and Ranson and Herricks "Introduction to Neurology."

Now that we know there is a direct connection between the trigeminal or 5th nerve, supplying the nose, and the vagus, or 10th which supplies the lungs, it should be understandable why we should expect one in an unbalanced neuro-physiological state to suffer a bronchial spasm, where there is an irritation or over excitation of the fifth nerve. The over excitation of the fifth nerve may be due to an ethmoiditis, a spur encroaching upon the ethmoid area, or even by mechanical irritation.

In some cases of asthma the entire cause may be found to be in the nose and nasal accessory sinuses. Even though a careful and painstaking examination by the internist may be made there may not be any condition found other than that found by the rhinolaryngologist that is contributing to the patient's asthma. These asthma cases frequently have a chronic antrum or frontal, or both causing the toxicosis along with their ethmoiditis which is the excitant or trigger point causing the broncho spasm. Though the rhinologist may find such a case and feel that he has sufficient cause in his field to cause the broncho-spasm he should not, no never, fail to have an internist make the same complete, thorough, searching examination that he would have had made, had he found less trouble in the nose. To fail to go routinely into every case thoroughly is courting failure. All patients suffering from asthma are in an abnormal physical condition, this condition to be known as a toxic state which is a definite departure from normal health. This abnormal condition is manifested by certain physical signs and by definite laboratory findings.

I shall have very little to say as to the work of the internist and the management of the asthmatic as I am endeavoring only to interest the rhinologist in a field in which he can render a greater service to humanity. I shall make a few definite statements of facts I have learned from my association with the medical men while working on the cases of asthma

that have come under my observation. Certain blood and urine findings and abnormally high eosinophile count, indicate a toxic state. Toxic state or toxicosis is not synonymous with allergy. The toxic state exists in all asthmatics, while only about one half the asthmatics are allergic. Allergy is only one of the symptoms of toxicosis and disappears with detoxication. Any patient suffering from toxicosis is a potential asthmatic. He only has to have some condition in his nose or respiratory tract that will act as a "trigger" to set off the broncho-spasm. Broncho-spasm is an exaggeration of a normal physiological reflex, involving certain conduction paths of the central nervous system. To substantiate the fact here presented, we can provoke an attack of asthma in an asthmatic by mechanical irritation of the same intranasal areas that cause sneezing. Then the broncho-spasm so induced can be promptly checked by anaethetizing this area. Spontaneous asthma is often relieved by cocaine intranasally. Abnormalities producing irritation are commonly found in these areas of the nose in these asthmatic patients and correction of them along with that physical condition causing the toxicosis is followed by a cessation of the broncho-spasm.

The curability of asthma has been definitely proven by treatment different from that usually pursued, by Dr. Burton Haseltine whom I have quoted, and Dr. James Adams of Glasgow, Scotland. Both of these men have written a great deal, and they now have a great many followers in both the United States and Great Britain. Dr. Chevalier Jackson says of Dr. Adams' book "The Radical Treatment of Asthma"—"It is the most helpful book on asthma thus far printed." Drs. Haseltine and Adams and the men they have taught either personally or through their writings have given us a treatment for asthma that may be considered revolutionary, but in view of the fact that it has been carried on for twenty-five years with success by them, it will be wise for us to give it serious thought. My experience with their method of treating asthma has proven to me that it is the most acceptable treatment so far used. In fact, all other treatments have proven to be failures in most cases.

Each asthma patient is curable exactly in proportion to the completeness and permanency with which two things can be accomplished: (1) Restore normal neurophysiological balance; (2) Remove the causes of vagus irritation.

The first means, to the clinician, the removal of all sources of toxic absorption, and restoration of adequate elimination of toxic products. The second means, to the clinician, the removal of all sources of vagus irritation in the respiratory tract, the great preponderance being ethmoid in origin.

Obviously the degree to which these two objectives can be obtained, depends not only upon the ability of the clinicians handling the case, but to their perseverance.

Since we are dealing with known factors we need not proceed by the

method of trial and error, but can begin with a definite program and can predict with gratifying precision the degree of relief obtainable in each case. It is so clear since each step undertaken is to correct some abnormality, that except for the inevitable defects of personal skill or judgment, there will be no wholly unimproved cases.

Another respect in which this method contrasts with others is that all measures employed, local or general, are eradicative rather than palliative. This naturally gives greater assurance of the permanency of all results. Another consideration of prime importance is that at no time is any treatment or procedure employed which is not essentially beneficial to the patient, whether or not it is directly related to the broncho-spasm.

No treatment need ever be recommended, which would not be helpful to the patient even were he not asthmatic. This is true in no other method of treatment.

Sixty deaths have been reported in the literature from attempts to desentitize asthmatic patients by the use of antigens.

The clinical problems are: (1) The relief of the symptoms of broncho-spasm. (2) Correction of the underlying departure from normal health which makes possible, not only the broncho-spasm, but all the other symptoms of the syndrone.

Every asthmatic is almost sure to have a pathological nose and it will most likely be an involvement of the ethmoid cells, and the nose must be restored to as near normal, as it is humanly possible to get it, or the return of asthma may be expected. An asthmatic's nose should be not only cured, but should be observed regularly every few months until complete normalcy is assured.

I wish to repeat, emphasize, and have it distinctly understood that an asthmatic should have regular examinations and frequent medical care, in addition to attention to the nose, during the entire course of treatment as well as following it. This after treatment is absolutely necessary if the patient is to be kept in the normal condition attained by correcting the pathology found at the time of the first examination.

The rhinologist must be sure not to overlook any condition in the nose that may likely cause asthma and must be able to eradicate the condition after he has once found it. The internist is held responsible for the cause of the toxic state. A very large per cent of the conditions in the nose attributing to asthma are not surgical, but can be cured with proper local treatment.

The detoxication treatment in addition to eradicating any and all conditions in the respiratory tract, that might be contributing to the asthma, and removing all foci of infection in the tract, must comprise other treatment necessary to make the patient as near a normal person as possible. Then in addition, the toxines of the body must be eliminated through all excretory channels, viz. the lungs, the kidneys, the skin,

and intestines. In detoxicating a patient unpleasant reactions and undue bodily depletion should be avoided.

The detoxication should increase elimination as well as increase the general metabolism and promote the general health. Though years of valuable time have been lost, to my mind, medical research has now turned, by a few at least, to a way of treating asthma that will, when properly done, bring results.

It is to be hoped that a thorough understanding of available facts may remove the confusion from the minds of those who are honestly trying to obtain the truth and the progress already made along these lines may become widely known. Above all, it is hoped that men will not condemn methods about which they have little or no information, but before condemning, definite facts, which are now available, be secured and studied.

Time will permit only an incomplete report of three of the many cases that have come under my management and treatment during the past four years.

Mrs. C. E. J., age 32, came under my observation February 20, 1934, giving history of having suffered from asthma for twelve years. Physical examination was made, and she was found to have prolapsed uterus, perineal and cervical lacerations, cystic ovary, and was very nervous, kidneys normal, eosinophile count 8 per cent, W.B.C. 10,400, R.B.C. 3,800,000, Haemoglobin 70 per cent. Examination of nose revealed polyps, numerous in number, chronic ethmoiditis, and chronic infection both antri. Treatment, surgical repair of pelvic findings, and removal of cystic ovary were done, a well balanced diet of high caloric value was prescribed. Nasal polyps removed, not all at once, but on several sittings over a period of several weeks. Her antrums were irrigated with solution of hexylresorcinal through the natural openings. The Dowling treatment was given daily for three weeks, then three times each week for a month, and once each week for another month. The bronchial spasms became less frequent from the beginning of the nasal treatment and this patient was asthma free after two months of treatment, or about the time the three-a-week treatments were discontinued.

Following the treatment this patient was decidedly less nervous, gained twelve pounds in weight, was in very much better general health. I attribute the work done by the surgeon as important in the restoration of her health, and the arrest of her asthma, as the treatment of her nose and accessory sinuses. I saw this patient two years after final discharge, which was four months after I first saw her, and she had continued to be asthma free with the exception of a very mild attack which she had during a flare up of chronic antrum infection.

Mrs. W. A. K., age 54, came under observation February 24, 1934. Gave history of having had asthma thirty years and had been treated in at least one nationally-known clinic, as well as by as many as twenty

other doctors without relief. She was suffering from asthma constantly when I first saw her, unable to leave her room. Her blood pressure was high, around 200 over 150 most of the time, albumen, but no cast in urine.

There was no general treatment of importance except elimination by bowels and skin. Examination of nose and nasal accessory sinuses showed infection of antrums and ethmoids with nose full of polyps. With the exception of removing the polyps from her nose, there was very little treatment given this patient other than the Dowling treatment which is placing of nasal tampons of 10 per cent argyrol as follows: The first in the supra meatol space, the next the middle meatol space, that space external to the middle turbinate and then the space between the middle turbinate and the septum. This treatment was carried out daily in her home until she was able to come to the office, which was on the tenth day. Her asthma was very much less severe within a week after the treatment was begun, and she gradually improved. During the first month of treatment at the office, all polyps were removed, finding it necessary to remove one or more polyps at least a dozen times. The nasal treatment described was kept up daily for a month, then three times each week for six weeks, then twice each week for a month, and then during the next two months she was treated only once each week. Before treatment was discontinued, she did not have any bad attacks of asthma, was fairly comfortable at all times, and has continued to remain so. She has never gotten where she does not have some embarrassed breathing at times, but she is happy in the thought that she sleeps well, keeps up with her social obligations, and goes wherever she pleases, and does what she pleases, which is a great contrast to what her condition was the ten years previous to my treatment.

L. M., age 6, came to me November 20, 1935. Suffered from asthma for three years periodically, attacks gradually growing more frequent and lasting very much longer. Had had asthma constantly for three months when she came to me. Examination by internist failed to find anything materially wrong with the child, except she was very nervous. She was never given any treatment by the examining physician, except she was eliminated by prescribing mercurials and salts, and sweats during the first week or ten days of treatment.

Examination by me revealed tonsils and adenoids removed, middle turbinates enlarged, mucuous membrane of nose had boggy grayish appearance, which is found in practically all the asthmatics, and there was a decided spur on the septum on left side which aggravated the already irritated nose. This child was treated with the Dowling treatment as described before, daily, for thirty days, at which time she returned to her home asthma free, subsequently it was necessary for her to make 160 mile trips for treatments which were continued twice each week for another month, and then once each week for six weeks. She

suffered probably half dozen light attacks during the last ten weeks she was treated, but they were light attacks and did not prevent her attending school. I continued to see and treat this patient every three or four months for a year, and she continued to remain free from asthma. Then she failed to see me for a year, and three months ago she had a slight attack of asthma. She was brought to me immediately and I found that due to a recent cold she had suffered, the septal spur had no doubt, irritated her nose, and with the lowered resistance, due to the cold, she had had some embarrassed breathing. The attack was light and with only three of the Dowling treatments given on alternate days, she was again discharged. I have heard from her mother recently and she says that she has not had any further trouble.

Chairman Griffith: I will ask Dr. Ellington to open the discussion of Dr. Gibson's paper.

Dr. A. J. Ellington of Burlington presented his prepared discussion of Dr. Gibson's paper. (Applause.)

Dr. A. J. Ellington (Burlington): Dr. Gibson has presented a very important subject in a very excellent paper. As the writer states, there is nothing new in the diagnosis nor in the technic of treating disease conditions found in asthma. The chief points he has stressed are:

1. An open mind concerning what can be done by applying *old methods* in a *new way;*
2. The absolute necessity of thoroughness in the history taking and the examination of the asthmatic by competent doctors;
3. The strict coöperation of these doctors;
4. The importance of submission of patients to the needed surgery and the necessary follow-up treatment;
5. That nothing should be attempted that would not be expected to benefit the patient's health, whether he is asthmatic or not;
6. The futility of adhering to the allergic theory of asthma and depending upon desensitization and dietetic treatment to effect permanent relief of this condition.

My reaction to the asthma problem is that different modes of treatment have been used more or less successfully by different men. There are certain cases, mostly the pollen-sensitive group, where good results, have been obtained by desensitization, diet regulation, and avoidance of contacts with the antigens, but in view of the many failures, we should direct our thoughts and treatment along other lines, especially where rational and practical methods are being employed to get good results.

Zinc ionization is used by many clinicians with reports of good results in various types of hyperesthetics rhinitis with or without asthma. I have used this treatment in a few cases with rather poor results.

The theory advanced or recalled by Dr. Gibson is founded on sound

ideas and common sense medical and surgical practice. It is based on the assumption that all asthmatics are abnormal—that they are toxic or hypersensitive or both, and that in such a state, any irritation of the vagus reflex may produce spasm of the bronchial muscles. There is nothing in this theory that is contrary to our knowledge of physiology, pathology, bio-chemistry, neurology, or anatomy.

The great difficulty in solving the asthmatic problem is in getting the patients to submit to all the details of the examinations, operations, and follow-up treatment. The problem, in my judgment, will remain a hard one for many years to come. However, that is not an excuse for our ignorance or laziness in failing to tackle this most distressing ailment to which so many human beings are victims.

Several authors call attention to the special role that ethmoid involvement plays in the asthmatic syndrome. They state that an ethmoid infection often acts both as a toxic source and as a nerve irritation area or "trigger point" of the reflex and involving the fifth, ninth, and tenth nerves, and sympathetic nervous system. However, they think that the ethmoid is more often the "trigger point" than the toxic source—the patient already being in a toxic state or hypersensitive state from some other cause. This very likely explains why ethmoid and other sinus operations have failed to cure asthma, because such surgery or treatment may solve only one phase of the problem. It does not, however, condemn all sinus surgery in asthmatics nor other cases. We know that many patients have been relieved by sinus surgery—and that most failures have been due to lack of coöperation from patients and sometimes, family doctors. Too often the patient is advised against any and all nasal operations. One doctor's slogan is, "Stand your sinus trouble as long as you can and then commit suicide." I sometimes feel like that is good advice when I have a disagreeable patient with a lot of adverse advisers.

Not all sinus infections demand operations; treatment often suffices. The Dowling treatment is very helpful in ethmoiditis before and after operation. The Displacement treatment, as suggested by Dr. Arthur Proetz of St. Louis, deserves a place in our treatment of ethmoidal cases. In my opinion, chronic sinusitis with polyp formation, only radical and complete surgical procedures will effect a cure. As already mentioned, failures are often due to unfinished work — causing all sinus surgery to be condemned.

Dr. Gibson's paper deserves our serious consideration. It would have been just as timely and interesting if presented before a general session of the State Society.

Chairman Griffith: I will ask Dr. Fitzgerald to continue the discussion.

Dr. J. H. Fitzgerald (Smithfield): My interest in asthma as related to toxicosis and vagal peripheral irritation began in 1934 after hearing

Dr. Hazeltine's paper and seeing his motion pictures of the Dowling treatment. However, my experience in treating these cases has been very small as compared to others whose papers I have read. But those cases I have treated have all been greatly relieved of their asthmatic attacks.

Dr. Adam of Glasgow says: "In order that the reader may draw his own inferences, let me say that asthma has been regarded and treated as a toxicosis accompanied by, or resulting in, vagal irritability; that the treatment has aimed at the reduction or abolition of this toxicosis and irritability; and that, to this end, attention is paid to diet, cookery, and outdoor exercise, to the proper functioning of the whole digestive and respiratory tracts, and, therefore, to the whole vagal area, and especially to the orifices of these tracts, the mouth and nose. Oral sepsis must be dealt with; nasal sepsis is not always present, but is oftener present than is imagined, and must be eliminated. Nasal irritation due to contact of opposing walls must be kept under, so as to reduce respiratory reflexes of nasal origin to a minimum."

One great trouble I have had in the treatment is getting the patient to return regularly, and for a long enough period. Dr. Gibson has not gone into the details of the Dowling treatment, which seems to me to be the major part of the treatment.

Admitting that detoxication is imperative, I think it is pretty well agreed that the ethmoid area is the "trigger zone," and that this area should receive surgical attention, where such is indicated, followed by the argyrol tampons. Before inserting the tampons, no anæsthetic is applied, and no drug such as adrenalin or any other which would interfere with cell action. Therefore, we are inserting these tampons in an area that is usually boggy or congested, and some discomfort is always produced. This varies, of course, with adult patients, but in children it seems to be always a dreaded experience regardless of how careful one is not to produce pain.

The tampons are made of cotton wound on a very small applicator. The latter should be smooth, or not rough, which would facilitate the removal of the cotton when placed as described by Dr. Gibson. A thread should be tied around the cotton on the applicator just tight enough to insure the removal of the cotton at the end of the treatment. This is not necessary, but it makes it much easier to get the cotton out, and insures your having it out. A fresh ten per cent solution of argyrol is used. After the tampons are in position the threads from each side are tied together and cut off near the nose. The patient is put in a recumbent position with pillows under his shoulders, with his head bent back until the top of his head is flat down, and his nose vertical. He remains in this position for one hour, and three to four drops of argyrol dropped in each nostril every fifteen minutes. In this position the argyrol cannot run into the mouth, and is taken up by cell action of the mucous mem-

brane. If cocain or adrenalin has been applied just previously, cell action is abolished, and the cotton will return with almost as much argyrol as it had to begin with. This is not true when no drug is used.

The question of argyria has often come into my mind where so much argyrol is used, sometimes every day for a week or more. However, I have not seen such a result, and I would like to ask Dr. Gibson if he has.

As stated in the beginning of this paper, my experience in treating asthma has not been large. However, I believe those men who are pioneers in this work are on the right track, and that when more is generally known about it, and the results obtained seen more generally by those doing nose and throat, the method will be accepted, and the treatment of asthma will be on a firmer foundation than ever before. (Applause.)

Chairman Griffith: Dr. Gibson, will you close the discussion?

Dr. Gibson: I don't think I have anything further to say, except to answer Dr. Fitzgerald's question. I had to shorten the paper, and therefore left out the treatment that Dr. Fitzgerald referred to. I have never seen a case. I have also had other men investigate and report to me whether or not they have. Dr. Kenneth Phelps of Miami, Florida, a well known internist, who is interested in this work, made quite a research, and he says that he has never known a case, and Dr. Hazeltine has reported the same thing.

Chairman Griffith: I believe the procedure now is to go into a business session—that is, for any reports of committees held over from last year.

The following officers were elected for the coming year: Dr. T. C. Kerns of Durham as Chairman of the Section, and Dr. C. W. Bailey of Rocky Mount as Secretary of the Section.

Chairman Griffith: Is there any further business to come before the meeting? If not, a motion to adjourn is in order.

It was moved and seconded that the meeting adjourn, put to a vote and carried, whereupon at 4:50 o'clock the meeting adjourned.

SECTION ON PRACTICE OF MEDICINE

WEDNESDAY AFTERNOON

May 4, 1938

The Section on Practice of Medicine of the Medicial Society of the State of North Carolina convened at 2:30 p.m., in the Ballroom, The Carolina, Pinehurst, Dr. F. R. Taylor presiding as Chairman.

Chairman Taylor: The Section will please come to order. I wish to read a telegram our Chairman, Dr. Paddison, sent to me this morning.

> "Please express my regret at not being able to attend Section meeting this afternoon. My sincere thanks to the doctors who who made this program possible, and to those serving on the committees, and to you for your valuable assistance."

I am sure we all genuinely regret Dr. Paddison's absence from this meeting as Chairman. He is in our section of the State, just over the county line, and is one of the most beloved physicians in our part of the state. It is a great personal disappointment to me, and I am sure to everyone here, to learn that he is ill and unable to attend.

The first paper is by Dr. E. B. Craven, Jr., of Lexington, "On Certain Fungus Infections of the Lungs and Their Relation to Asthma." We will hear from Dr. Craven at this time. (Applause.)

Dr. Craven presented his prepared paper. (Applause.)

ON CERTAIN FUNGUS INFECTIONS OF THE LUNGS AND THEIR RELATION TO ASTHMA

Erle B. Craven, Jr., M.D.
Lexington, N. C.

HISTORICAL

While the etiology and pathogenesis of certain fungus infections of the lungs, such as actinomycosis and blastomycosis, are accepted by modern investigators, the exact relationship between the aspergilli and moniliæ, and other chronic non-tuberculous lung diseases is still open to question. As long ago as 1856, Rudolph Virchow[1] demonstrated the post-morten findings in three cases of chronic pulmonary disease which he believed due to infection with Aspergillus fumigatus; and, in 1890, Diuelafoy, Chantemesse, and Widal[2] wrote of a pseudotuberculosis of pigeons caused by Aspergillus fumigatus. Macaigne and Nicaud[3], in 1926, described a case similar to Virchow's in which the presence of tuberculosis was excluded at autopsy. In other cases not coming to autopsy, Macaigne and Nicaud were able to obtain positive skin reactions with an extract of the organisms. Lapham,[4] in 1926, and Emer-

son,[5] in 1930, have described cases of chronic aspergillosis of the lungs; and, in 1928, Vallery-Radot and Giroud[6] wrote of a disease which they called Sporomycosis of Tanners, in which the symptoms of acute bronchitis were believed due to to the massive inhalation of the spores of Aspergillus fumigatus. They obtained specific precipitin and skin reactions in some cases. Sayers and Merriwether,[7] in 1932, described an interesting group of cases of farm laborers, in which the X-ray picture simulated miliary tuberculosis. Aspergillus fumigatus and Aspergillus niger were obtained from the sputa of these cases.

From the more recent literature, I have been able to collect no less than eighteen papers dealing with the relation between fungus spores and bronchial asthma. A partial list of the fungi believed to possess etiologic significance include:

Alternaria	Mucor
Aspergillus	Penicillium
Chætomium	Fusaria
Hormodendrum	Trichoderma
Monilia sitophila	Trichophyton
Monilia albicans	Yeast

The articles of Prince and Morrow[8], and of Feinburg[9], and of Feinburg and Little[10] are of special interest and quite comprehensive in their treatment of the subject. In my paper, I have no intention of adding to the already well documented proof of the etiologic significance of these organisms so far as asthma and hay fever are concerned, but rather to present certain evidence which, to me, would seem to further indict these microörganisms and their products as actual destroyers of tissue.

METHOD

Chronic bronchitis and bronchiectasis, caused by so-called non-specific organisms occur frequently in medical practice, alone or together with varying degrees of parenchymatous involvement. Most of these cases are of long duration, and many have associated the distressing symptoms of non-seasonal asthma. In an endeavor to fix, if possible, a more exact etiology for these illnesses, such cases as have come to my attention in the past four years have received a thorough study of the sputa, in addition to the usual studies of the history and the findings on physical examination. The sputum of each case, freshly expectorated, was studied as follows: 1(a) The gross characteristics of the specimen; (b) dark-field examination and gentian violet stains of fresh smears for fuso-spirochetal organisms; (c) examination of fresh smears in 10 per cent sodium hydroxide for spores and mycelia; (d) examination for tubercle bacilli by the Ziehl-Neelsen method; (e) Gram stain. 2(a) Selected particles of fresh sputa streaked on blood-agar slants and incubated

at 37° C.; and (b) streaked on Sabouraud's medium and incubated at 37° and at 25° C. (See table.)

The material for this paper consists of the results of study in twenty-seven cases of chronic non-tuberculous pulmonary disease, in four of which non-seasonal asthma was a dominant symptom, and in one case of erosio interdigitalis included because of its occurence with two cases of pulmonary moniliasis in a single family group.

REPORT OF CASES

Case 1. A white matron, 50, with chief complaints of fever, cough, and generally run-down condition of six months duration. The present illness had begun with a bad cold, with productive cough, pain in the chest, and fever. Acute symptoms had lasted for three weeks, after which time there was an annoying productive cough and daily low-grade fever. I saw the patient in July 1934, at which time there was an acute exacerbation. There were high fever (104° F.), tachycardia, cough, and chest pain in an undernourished cachectic patient. The respirations were grunting in type, and the patient complained of severe pain in the region of the left shoulder, and along the left lateral chest wall, where a soft to-and-fro friction murmur was heard. At both bases and at the angle of the left scapula there was impairment of the percussion note, and the breath sounds were distantly tubular in type. Many medium and coarse moist rales were present throughout both lower lobes. The sputum was abundant, greenish, ropy-mucoid, with occasional purulent flecks, and small masses of whitish caseous material, and had a distinct yeasty odor. Direct smears prepared from the caseous masses with 10 per cent sodium hydroxide showed innumerable branching mycelia, and many round and oval spores. Cultures on Sabouraud's medium yielded a practically pure culture of Aspergillus fumigatus. (See Table 1.) Skin tests were strongly positive to a 1-to-100 dilution of the vaccine prepared from the culture (erythema and swelling 4x5 cm. in 24 hours).

Anatomical diagnosis: Chronic bronchitis, peribronchial lobular pneumonia, acute pleuritis.

Potassium iodide was administered in large doses by mouth (grams 4 t.i.d.), and the vaccine was started in small doses. The patient's temperature ranged between 100 and 104 for two days, then subsided slowly. During the next two weeks she became afebrile, but rales persisted at both bases for another month. The vaccine and potassium iodide were continued for three months. At the end of this period she felt completely well and had gained 15 pounds. The lungs were entirely clear, and repeated examinations and cultures of the sputa were consistently negative for fungi.

Case 2. A 66-year-old white woman with a history of productive cough, fever, chills, and loss of weight dating back to the influenza

epidemic of 1918. During this time there have been transitory periods of improvement, but for the past three years the patient had been confined to bed; 25 or 30 sputum examinations for tuberculosis had been reported negative. She had been treated without improvement with neoarsphenamine in the supposition that her pulmonary lesion might be fuso-spirochetal in origin.

At the time of my examination, she was acutely ill with a temperature of 104, and was wracked almost incessantly by harsh coughing. From a pint to a pint and a half of whitish ropy, purulent material was expectorated daily. One was struck at once by the strong yeasty odor emanating from the sputum cup and the patient's breath.

The old lady appeared to be in the final stages of a chronic wasting illness. Anteriorly throughout both upper lobes and posteriorly at the right base there were large areas of diminished resonance with harsh to frankly tubular breath sounds, and many moist rales. At the angle of the left scapula the breath sounds were cavernous, and there were showers of coarse moist rales after coughing. In the sputa there were particles of caseous material ranging from the size of a pin-head to that of a large pea. These masses were practically pure cultures of Monilia albicans. (See table.)

Anatomical diagnosis: Chronic bronchitis and bronchiectasis; confluent lobular pneumonitis; cavity upper portion left lower lobe.

Because of the duration of the illness and the extremely bad condition of this patient a hopeless prognosis was given. Large doses of potassium iodide were administered, and the patient lived for nearly three years, becoming ambulant and quite active. She died suddenly, while ambulant, of coronary thrombosis.

Case 3. The 42-year-old son of the patient, whose case is numbered 2, came to me shortly after this time with a history of chronic productive cough and asthma of one year's duration. He was a large, well nourished individual, but he said he had lost 30 pounds in the preceding year. During this year he had noted a progressively increasing dyspnea on heavy exertion and was used to being waked nearly every night by several attacks of suffocation, during which there were paroxysmal coughing and expectoration of frothy mucoid material. Physical examination revealed no evidence of disease of the heart or aorta, and Wassermann reaction of the blood was negative. At both lung bases there were numerous moist and occasional sibilant rales. X-ray examination of the lungs showed an inter-lobar plastic pleurisy on the right with hilar thickening; thickening and slight dilatation of the terminal bronchi and marked enlargement of the hilar and posterior mediastinal lymph nodes. The X-ray diagnosis was chronic non-tuberculous bronchitis of both bases suggestive of fungus infection.

While these X-ray studies were being made and interpreted, I had

recovered a positive culture of Monilia albicans, an organism identical with that found in the preceding case. (See table.)

Treatment consisted of vaccine and oral administration of potassium iodide. This patient's skin test was positive to a 1-to-1,000 dilution of the vaccine. There was prompt improvement.

Case 4. The 28-year-old brother of the preceding patient had been suffering for eight months with an ulcerous infection between the middle digits of his right hand. At times there would be a scaling ulcer between the fingers and red, swollen and tender nodules on the dorsum of the hand and wrist. Frequently, these lesions would open spontaneously and tenacious whitish pus would exude; often they would recede without draining. In a direct smear of the pus aspirated from one of the nodules numerous spores were seen. These, when cultivated, proved to be Monilia albicans.

Anatomical diagnosis: Erosio interdigitalis (often erroneously called erosio interdigitalis blastomycetica). In this case there was no discoverable pulmonary disease.

Case 5. A seven-year-old white girl who was shown to me by Dr. Jean Craven. The history was of having one bad cold after another, with chronic cough and expectoration, of one year's duration. There were associated poor appetite with loss of weight and general failure of development. The physical examination showed a thin, poorly developed, febrile child with a harsh cough producing thick, whitish, ropy sputum in which the yeast odor was unmistakable. The signs in the lungs consisted of many small scattered areas of fine moist rales from apices to bases and throughout both lungs. The X-ray showed these to be due to a soft mottled infiltration ranging in size from a pin-head to a small marble. It was a picture not suggesting childhood tuberculosis. Indeed, frequent and intensive study of the sputa showed no tubercle bacilli, although the tuberculin test was moderately positive. Yeast-like bodies were seen in the direct smears, and on appropriate media a heavy growth of monilia occurred. We were prepared to believe that this child had tuberculosis, probably a lesion of the hilum nodes; but had the extensive infiltration in the lung fields been due to this disease it seemed improbable that the sputa would be free of tubercle bacilli. And, as stated above, monilia were identified in caseous particles occurring in the sputa. The patient was, therefore, given large doses of autogenous vaccine. Her clinical improvement was striking, with almost immediate gain in appetite and weight and cessation of fever and cough. Now, after slightly less than three months, she has been afebrile for six weeks, and has gained in weight from 51.5 pounds to 55.5 pounds. An X-ray taken during the past week shows complete clearing in the lung fields, but persistent hilum lymph node enlargement of moderate extent.

Case 6. A 16-year-old white girl with a chief complaint of cough, and bad cold since the day of birth. The present illness, according to the

parents, had begun at the time of birth or at least during the first two or three days of the patient's life, and had consisted of a practically continuous cough which interfered seriously with the child's nursing. During her first five years, the cough was productive only at times when she "caught" a bad cold; but from that age on the amount of sputum progressively increased and assumed a thick, greenish, ropy appearance, and an offensive odor. From the age of 10 to the present, the patient and her parents estimate that she expelled from a half pint to a pint and a half of this material daily, and without remission from year to year.

The physical examination showed a well-developed and fairly well nourished young girl whose only external abnormality was a severe facial acne. The breath was fairly reeking with a sour yeasty odor, and there was incessant cough productive of a measured pint of the sputum described above while the patient was being examined. The chest was symmetrical but with little expansion. The mediastinal dullness extended 8 cm. to the *right* of the sternal border, and only 2 cm. to the left in the 4th interspace. A well defined pulsation could be seen and felt 7 cm. to the right in the 4th interspace. The heart sounds were of maximum intensity in this same area. Other than of position, no cardiac abnormalities were elicited. The lungs were resonant throughout except for slight impairment of the percussion note at the right base with poor descent at the base. Throughout this lobe there were innumerable coarse moist rales and many sibilant and sonorous rales. There was tympany in the right hypochondrium and right anterior chest from the level of the 4th rib downward. In the corresponding area on the left side there was dullness to flatness.

It is obvious from the description we were dealing with a case of *situs transversus*—complete transposition of all the viscera. This was fully confirmed by fluoroscopy and X-ray, and by the electrocardiogram which showed complete inversion of all the waves in Lead 1, and transposition of Leads 2 and 3. (Lantern slide.)

Sputum examination and culture proved the presence of Aspergillus, and, on a regime of iodides and vaccine there was satisfactory improvement, both generally and in the cough and offensive expectoration.

This case is shown to illustrate how a presumptive congenital abnormality, i.e., bronchial obstruction or atelectasis or both, may be the mechanical basis for the later development or parenchymetous destruction by microörganisms.

BACTERIOLOGY

Because the aspergillus and certain other fungi are often regarded as common laboratory contaminants, the cultures on Sabouraud's medium were streaked on slants instead of Petri dishes, and the tubes were kept tightly sealed. Control slants were streaked with an indifferent sputum and exposed to the laboratory air before incubating. Sputum for cul-

ture was collected in sterile Petri dishes. Therefore, whenever in the above cases growths of fungi were obtained it is reasonable to suppose their origin was in the sputum used for culture. The cultures for fungi were incubated at 37° and 25° C. Colonies of fungi appeared much sooner in the tubes at room temperature.

DISCUSSION

The question may fairly be asked: are these microörganisms anything other than more or less harmless saphrophytes living in already diseased lungs. That they are capable of destroying tissue is unquestionable, for I have seen skin areas in sensitive individuals made necrotic by the intracutaneous injection of an extract of the dead organisms. In other words, skin reactions homologous to those produced in tuberculous patients by strong doses, i.e., necrotizing doses, of tuberculin undoubtedly do occur. Therefrom, the organisms, or their products, can, and do, destroy healthy human tissue. And, it seems just to infer from the evidence presented that they may destroy lung tissue, whether as first invaders or because the lung tissue has become susceptible due to mechanical or other reasons.

BIBLIOGRAPHY

[1] Virchow, R.: Virchow's Arch., 9, 557,1856.
[2] Dieulafoy, Chantemesse and Widal: Gax. des hop., 63, 821, 1890.
[3] Macaigne and Nicaud: Presse Medicale, 34, 401, 1926.
[4] Lapham, M. E.: J.A.M.A., 87, 1031, 1926.
[5] Emerson, C. P.: Jour. Ind. Med. Assn., 23, 167, 1930.
[6] Vallery-Radot, P., and Giroud, P.: Bull. Soc. Med. des hop., 52, 1632, 1928.
[7] Sayers, R. R., and Merriwether, F. V.: Am. Jour. Roent., 27, 337, 1932.
[8] Prince, H. E. & Morrow, M. B.: Molds in the etiology of asthma and hay fever with special reference to coastal areas of Texas. South. M. J. 30: 754-762, 1937.
[9] Feinburg, S. M.: Asthma and allergic rhinitis from molds; analysis of 90 cases. Journal-Lancet. 57:87-90, 1937.
[10] Feinburg, S. M., and Little, H. T.: Studies on the relation of microörganisms to allergy. J. Allergy, 7:149, 1936.
[11] Underwood, G. R.: Importance of fungus (Alternaria) as cause of asthma in Nebraska. Nebraska M. J., 20:400, 1935.
[12] Prince, H. E., Selle, W. A., & Morrow, M. B.: Molds in etiology of asthma and hay fever; preliminary report. Texas State J. Med., 30:340-44, 1934.
[13] Barnard, J. H.: Monilia albicans in chronic bronchial asthma. M. Rec., 130:534-6, 1934.
[14] Ellis, D.: Incidence of asthma in Port Sudan, with special reference to influence of moulds. Guy's Hosp. Rep., 83:102-111, 1933.
[15] Credille, B. A.: Bronchial asthma due to moulds; case. J. Michigan M. Soc., 32:167, 1933.
[16] Hansen, K.: Bronchial asthma resulting from hypersensibility to spores of mold fungi. Deutches Arch. f. klin. Med. 173:483, 1932.
[17] Brown, G. T.: Sensitization to fungi. Ann. Int. Med., 6:655-671, 1932.
[18] Towey, J. W., Sweany, H. C., & Huron, W. H.: Severe bronchial asthma apparently due to fungeous spores found in maple bark. J. Am. M. Asso., 9:453-9, 1932.
[19] Flood, C. A.: Observations on sensitivity to dust fungi in patients with asthma. J. Am. M. Assn., 96:2094-6, 1931.
[20] Benton, H. S.: Asthma due to mold—Aspergillus fumigatus. J. Am. M. Assn., 95:189-91, 1930.
[21] Hopkins, J. G., Benham, R. W., & Kesten, B. M.: Asthma due to fungus; Alternaria. J. Am. M. Asso., 94:6-10, 1930.
[22] Cobe, H. M.: Asthma due to a mold; hypersensitivity due to Cladosporium fulvum, Cooke,, a case report. J. Allergy, 3:389-91, 1932.
[23] Feinberg, S. M.: Mold allergy; its importance in asthma and hay fever. Wisconsin M. J., 34:254-88, 1935.
[24] Hansen: Aspergillus asthma. Verhandle. d. deutsch. Gesellsch. f. inn. Med., Kong., 40: pp. 204-206, 1928.
[25] Cadman, F. T.: Asthma due to grain rusts. J. Am. M. Asso., 83:27, 1924.
[26] Craven, E. B.: The role of the aspergilli and of the moniliæ in chronic non-tuberculous pulmonary disease, with and without asthma. South. Med. & Surg., 97:678, 1935.
[27] Feinburg, Samuel M.: Seasonal hay fever and asthma due to molds. J.A.M.A. 107, 1938, 1861.

Dr. N. F. Conant (Durham): Dr. Craven is to be congratulated for recognizing and presenting these cases of chronic non-tuberculous pulmonary disease. While we have information concerning the etiologic role in pulmonary disease of such pathogenic forms as blastomyces, actinomyces and coccidioides, more knowledge of the so-called saphrophytic fungi and their possible etiologic role is greatly needed.

Species of penicillium, aspergillus, and monilia have been considered doubtful primary excitants of diseases, but pertinent information about them can be made available only by the accumulation of data from carefully studied cases such as we have just heard.

As most of these cases come to the attention of physicians in private practice we look to them for clinical evidence concerning the possible role of common fungi as excitants of pulmonary disease.

Dr. Elbert Persons (Durham): Mr. Chairman, I would like to ask Dr. Craven a question: If in his experience he has ever felt it was better to desensitize these people with Monilia vaccine before large doses of potassium iodide were given on the basis that you might make them sick if the potassium iodide acts too specifically?

Dr. E. B. Craven, Jr. (Lexington): Mr. Chairman: As to Dr. Person's question, I think he is right. I gave those patients in the beginning potassium iodide and vaccine simultaneously, but lately I have been using only the vaccine.

Incidentally, I did not mention it in the paper, but I always start with the highest dilution of the vaccine to which the patients reacts positively, and work it up from there.

Chairman Taylor: Before going on to the next paper, lest I forget it later, the Chair would very gladly entertain a motion from this section that we pass a resolution of regret at Dr. Paddison's inability to be here, and express our sympathy, and hope that he will soon recover from his illness. Do I hear such a motion?

A motion was duly made, seconded, put to a vote, and carried, that a telegram be directed to Dr. Paddison that afternoon expressing regret for his illness and hope for a speedy recovery.

Chairman Taylor: I shall try to get in touch with Dr. Long, Secretary of the Society, and if I don't I will send the telegram myself.

The next paper is by Dr. Elbert Persons, of Durham, on "The Indications for Specific Treatment of Pneumonia in a North Carolina Hospital." (Appluase.)

Dr. Elbert Persons then presented his prepared paper. (Applause.)

THE INDICATIONS FOR SPECIFIC TREATMENT OF PNEUMONIA IN A NORTH CAROLINA HOSPITAL

Elbert L. Persons, M.D.
Durham, N. C.

The records of Duke Hospital show 227 patients over the age of 12 years who have been admitted with what might be classified as a primary pneumonia. This series excludes all cases in which the pneumonia was secondary to pregnancy or to a serious pre-existing disease, and must be regarded as based on arbitrary criteria. These criteria, however, all act to eliminate cases in which the pneumonia might be regarded as incidental to the course of some other disease. Of these 227 cases, 36, or fewer than 1 out of 6 cases of "primary" pneumonia have received injections of type-specific antiserum.

When it is recalled that this series of cases started in 1930, by which time the value of type I pneumococcus antiserum had been proven and the value of type II antiserum was apparently very definite, these figures seem to be worth examination and criticism. The serum treatment of pneumonia has received much favorable publicity, yet we are treating only one out of each 6 or 7 cases admitted to the Hospital primarily because of pneumonia.

The cost of treatment with serum might be an important factor in such a series, but does not operate here. Thanks to administrative foresight, the cost of therapeutic sera has been lumped with that of drugs and is included in the regular charges for hospital care. We do not, therefore, increase the cost to the patient when we decide to administer pneumococcus antiserum.

There are, however, certain other factors to be considered which might alter the significance of our figures. The proportion of cases of lobar pneumonia to cases of bronchial or atypical pneumonia is a factor. We are not concerned about the distinction so long as the pneumonia indicated is due to a strain of the pneumococcus for which specific serum is available, but of 108 cases classified as lobar pneumonia all but one were thought to have been due to pneumococcus, while only 19 out of 88 cases of bronchopneumonia were attributed to the pneumococcus, an increase in the proportion of lobar types of involvement would, therefore, tend to increase the frequency of serum treatment.

The proportion of cases of lobar pneumonia also, necessarily, varies with the community served. Patients coming to the hospital from a distance are perhaps more likely to have the lobar or more severe type of illness, but this factor may well be balanced by the influence on the series of cases arising in a student body of over 3,000 in which diagnostic facilities allow the recognition of cases which might otherwise be regarded as upper respiratory infection or bronchitis.

Finally, the proportion of treated cases will rise as therapeutic sera are developed for more and more pneumococcus types. This factor may be somewhat more important in North Carolina than in the average area on the temperate zone. However, in a collection of 14,869 cases 33.3 per cent were due to type I and 20.8 per cent to type II, accounting for 54 per cent of all cases, and in our series 32 out of 108 or 30 per cent were due to type I and 18 or 17 per cent to type II, accounting for 47 per cent of the total. Antisera are now available for the types of pneumococci which are most frequently encountered, and sera for the less common types will be used infrequently.

These considerations suggest the somewhat painful conclusion that, as the effects of serum treatment in pneumonia become public knowledge, at least 2 out of 3 and perhaps 4 out of 5 patients who are suffering from pneumonia may not receive the benefit of serum treatment. A brief survey of the indications and contra-indications for serum therapy, as shown in this series, seems indicated.

No accurate conclusions as to specific therapy can be reached in the absence of knowledge as to the etiological factor. Only 209 out of 227 cases in our series showed this information, and more careful attention to typing methods would certainly have increased this percentage. The possibility of contamination with mouth organisms might be considered except in dealing with cultures of the blood and pleural fluid and with material from "lung puncture" (a procedure which is seldom justified). On the other hand, type I and type II organisms are distinctly not normal inhabitants of the upper respiratory tract, and their presence on a swab which has been used to tickle the patient's pharynx must be regarded as of some significance. Also, many patients who swallow sputum can easily be induced to furnish a specimen if its importance is emphasized.

A second source of error arises in the fact that some types of pneumococci are normally present in the human respiratory patches. The demonstration of type I or type II organisms is strong presumptive evidence as to etiology and the demonstration of type V, VII, and VIII is difficult to question. Other types, which may be normal inhabitants of the mouth, might lead to false conclusions as to the etiology of the disease.

Granting careful collection of sputum and other culture material and accurate typing, other factors remain to be considered. It is certainly useless and wasteful to give serum to a patient *in extremis*. There is no good evidence that serum is of value when administered after the third day of the disease, although it must be admitted that control of the bacteriemia should and probably does promote a favorable outcome at any stage of the infection. However, in the Massachusetts Pneumonia Program serum was furnished gratis only to patients who could receive it before the end of the fourth day of the disease. This was done both to

reduce the expense inherent in the administration of large doses to very toxic patients, and to emphasize the necessity for the early use of serum. This would seem to be a reasonable limitation where public funds are involved and, in general, it is probably useless to do more than control bacteriemia (if this can be done) late in the disease.

At this point it might be well to mention a special group of cases with which good results may be obtained by an infraction of the usual rule. Proper methods of sputum collection and typing and emphasis on early treatment should reduce the number of cases in which there is a very narrow margin of time if treatment is to be started in three days. Such cases will, however, occur and when they do it is well to remember that lobar pneumonia, when entirely characteristic in onset, occurring between the ages of, say, 15 and 45, is due to pneumococcus of type I or type II more than half the time and, if the patient be male, this proportion rises to 75 per cent. It may, then, be justifiable to institute treatment in a case of this type before the bacteriologic diagnosis is made.

In cases where our clinical and bacteriologic knowledge makes serum advisable, there are several types of case to which it should *never* be administered. The first is the individual who knows that he is sensitive to horses or to horse serum. No test should be done on such individuals. The second group is those giving positive reaction to the introduction of serum in the conjunctival sac. The "eye test" is regarded as a grave signal of danger and the intravenous administration of serum should not be attempted. A third group is those patients with the history of asthma or hay fever (not due to horses) and a positive skin test even thought the "eye test" is negative there is definite danger in treating these cases. Finally, there is serious risk associated with the intravenous administration of horse serum to an individual who has had an injection of similar serum more than one week but less than three months from the time of treatment.

Horse serum, or any foreign serum, should always be given with caution and this is particularly the case in individuals giving a history of previous asthma or hay fever even though all tests are negative. The presence of a positive skin test without any significant history is probably the least dangerous of abnormal signs, although it certainly suggests that the patient may suffer severely from serum sickness later in the course of the disease. Even in these cases, it is probably well to give a preliminary subcutaneous injection before attempting intravenous administration.

Patients may suffer from three types of reaction to serum, and it is not always possible to distinguish the type. Teh development of serum disease, which is common after serum treatment of pneumonia, need cause no anxiety. Properly handled it is harmless, if extremely uncomfortable. The immediate, shock-like reaction, which may be associated with asthma or urticaria or may consist entirely of vascular collapse,

carries great risk with it, and treatment should be discontinued if this type of reaction occurs. It is unlikely to occur after one or two intravenous injections have been tolerated unless a large dosage of serum is given rapidly. There is general agreement that slow administration of small doses of serum reduces the likelihood of these reactions.

The third type of reaction is the febrile or theraml reaction, which may occur at any time during the course of treatment but is more likely to be associated with the use of certain lots of serum than with others. These reactions, also, carry with them a definite risk and may be fatal.

Finally, no consideration of our series is complete without emphasis on the fact that three-eighths of the cases admitted to the hospital with pneumonia were patients from whom the pneumococcus could not be isolated. In 30 of these or nearly one case out of seven, the staphylococcus aureus appeared to be the most significant invader. Twenty patients had infections due to beta hemolytic streptococci and 7 had a mixture of these two organisms. There were two instances of bronchopneumonia due to tularemia in which the pneumonia appeared to be "primary" at the time of admission to the hospital.

In summary, then, a review of our 227 cases of primary pneumonia shows that 108 of these have been classfied as lobar pneumonia and that 50 were due to pneumococci of type I or II. Forty-seven per cent of our lobar pneumonia is due to type I or type II as against 54 per cent of a series collected from a wider area. Careful collection of sputum and the demonstration of type specific pneumococci are essential. Every effort should be made to institute treatment at the earliest possible moment and the use of large amounts of serum late in the disease should probably be regarded as wasteful. Administration of serum depends upon knowledge of the possibilities and care in the observance of precautions which should become second nature to the physician.

We have treated one case in 6 or 7, perhaps we can hope to offer specific treatment to one case out of four, and that that one case will be the patient who is in the greatest danger.

Dr. Hubert B. Haywood (Raleigh): Dr. Persons has spoken to us from his own experience and from authority, too, from having guided the treatment in these cases of which he spoke.

It is interesting to know that in the series Types I and II have predominated with about forty-seven per cent of the total, which is pretty close to the national average; and North Carolina, therefore, so far as the etiological type of organism is concerned would follow the general experience of the country. The ten per cent error in typing, of course, should be rechecked.

On the question of finding the higher types in the sputum when Types I and II are commonly found: Those cases should always be retyped when it is possible to do so.

I think the Doctor has covered the ground well from a statistical point of view and has spoken of the dangers in the asthmatic type of patient.

The question I would like to ask Dr. Persons is this: Is there such a thing as desensitizing a patient under these circumstances? I saw a little boy with an infection of type I who was asthmatic. He was a very early case and he had no physical signs. We got a swab from the throat which showed the organism, but we didn't give him serum because he was a definite asthmatic. I would like to know if there is such a thing as desensitizing this type?

Dr. Paul H. Ringer (Asheville): Mr. Chairman, I enjoyed Dr. Persons' paper very much. It brought to mind an experience which, while I was not there when it was most dramatic, was rather startling to me and illustrates a point mentioned in his paper.

Two or three weeks ago I was asked to see a patient who had developed type I pneumonia. He had had a hand caught in some machinery and half of it had been torn off. He developed this pneumonia and it was type I. The eye test and skin test were both negative. When after a lapse of the customary time they started to inject the first pneumococcus serum, he had an anaphylactic shock from which he was revived. Then it came to mind that about three or four days before that he had had a dose of antitetanic serum. He was then desensitized very carefully and gradually was able to take his serum and was able to make a complete recovery.

Ten years ago I had pneumonia on shipboard and it was impossible to type the sputum. I had had hay fever as a youngster for many years, but I had had none at all for ten, twelve, or fifteen years, so the eye test and skin test were both negative. I was given the serum but it did no good. The only thing that the injection of this type I serum did was that after I recovered it gave me a red hot case of serum disease. It is the most miserable and terrible illness that a man can have and I warn you against it.

I enjoyed Dr. Persons' talk very much, indeed. (Applause.)

Dr. G. D. Dixon (Ayden): It has been but a few short years since we began to think about pneumonia as anything except pneumonia—lobar or bronchial.

Some 25 or 30 years ago the serum was discovered and for some reason or another it was dropped. But for the last few years we have been paying considerable attention to the typing of pneumonia and the development of a serum that will be efficient in treating pneumonia. We find there are some 30 or 40 per cent of pneumonia cases that it would be possible, if we had them in the right place at the right time, to treat with serum. That leaves us something like 60 or 70 per cent of the pneumonia cases which are perhaps more fatal. I don't know

of any pneumonia that is more fatal than a streptococcic pneumonia—that we are not discussing. It seems to me that the medical man is just like every other man in the world, and every man in the world is just like a sheep. When the old ram starts, the whole flock will follow him over the fence.

I would like to see some of our universities pay more attention—if they are paying any attention to it—to reporting to us the facts of the treatment of various types of pneumonia, some cases with sulfanilamide and some with X-ray. I don't know whether I would rather take my chances of dying without serum or of serum sickness—what we commonly term in the country "maddage from horse serum." I had diphtheria once and I got along fine with the diphtheria for three days; and for three solid weeks I would rather have been in hell. If the serum treatment is going to give us this discomfort we should think more about X-ray and sulfanilamide—both of which have their advantages and disadvantages—which people today are finding effective in the treatment of pneumonia. I would like to ask that the reader of this paper bring us another one next year comparing the three treatments. (Applause.)

Dr. Elbert Persons (Durham): In answer to Dr. Haywood's question, I quite agree that the individual who is sensitive to horse serum can probably never be desensitized in the same sense that it is possible to desensitize a sensitive guinea pig. The person who is sensitive will probably gain his desensitivity after a certain period of time, and it is just a question of sneaking in the serum that we want to have him get. It is a matter of watching him very carefully and weighing the risk in the disease with relation to the serum treatment of the pneumonia and the risk involved. It is a matter of clinical judgment. It is simply unfortunate that the development of the serum puts one more serious decision before a physician that he has to make that may get him into trouble and lay him open to criticism.

The group of cases I was talking about were primary pneumonia in which the sick ones were going to die of pneumonia and not of some complicating disease. I believe that there is no question in reviewing the cases, even though we lack statistical evidence, but what pneumonia serum has been of great value. Having had serum sickness very severely twice myself, I would still want the serum if I developed pneumonia.

Beyond the statistical side there is one instance I would like to cite. About three months ago a fourteen-year-old child came in with a very severe acute mastoid, and developed pneumonia. That patient had the pneumonia cured by an injection of a thousand units of type II antiserum and six hours later had the mastoid operated on, and left the hospital ten days later. Single cases like that, perhaps convince most of us as much as statistical evidence. (Applause.)

Chairman Taylor: The next paper is by Dr. Allyn B. Choate, of Charlotte, on "Treatment of the Heart in Lobar Pneumonia." (Applause.)

Dr. Choate presented his prepared paper. (Applause.)

TREATMENT OF THE HEART IN LOBAR PNEUMONIA

Allyn B. Choate, M.D.
Charlotte, N. C.

One of the most interesting phases of cardiac therapy is the treatment of the heart in infectious diseases, especially lobar pneumonia.

I realize that cardiac complications should not be so frequent as in the past due to the new serum now available; however, if only one case is correctly handled this paper will be worth while.

Before discussing the treatment of the heart in lobar pneumonia one should understand the theory on which such treatment is based.

The effect of infections on the heart may be divided into two groups, those which are likely to cause permanent damage, and those which poison the heart muscle temporarily. Pneumonic infection belongs to this latter group. It has been shown that in pneumonia the heart muscle is essentially normal, whereas pneumonic blood is distinctly poisonous to heart muscle when it is suddenly fed with it. During the gradual course of the disease the blood is progressively affected and the heart muscle gradually adjusts itself to the poison with striking success, so that in case of functional incapacity resulting from poisoning of the muscle such incapacity will usually disappear following recovery from the infectious disease.

The theory as has been pointed out by Warfield, is the body responds to infection by an increase in body temperature. The increase of heat within the body causes an increase of the physiologic processes in the body with an increased metabolism which demands an increased blood supply to the various organs. To get this extra blood the heart is called upon to do a greater amount of work which it accomplishes by increasing its own contractions so that the output per minute is greater.

The more severe the infection, the more toxic the patient, and the contractions become still more rapid, the output smaller and the blood pressure is usually lowered due to slight vasodilation. The contractions are so fast that the sounds are not heard distinctly and the condition is usually diagnosed cardiac failure.

Is it really cardiac failure, or can the trouble exist elsewhere?

The liver, lungs, capillary plexus and the splanchnic area within the body may act as a reservoir where blood may collect and be of little or no value toward keeping up blood volume for so much of the blood may collect in these areas and fluid be withdrawn from the circulation that the circulating blood volume is greatly reduced, even to the point

where there is not sufficient blood volume to stretch the heart muscle. Thus if the ventricles are not filled the contractions become weak, the volume output less and the heart rate must increase to keep up adequate circulation.

As just stated there is a demand for increased blood supply to all the organs of the body due to the fact that cloudy swelling is found throughout the body with advanced bacterial infection.

This results in disintegration of body tissues which produce a histomine like substance, which affects the capillaries as does histomine causing a transudation of serum from the capillaries.

The cells become swollen with serum absorbed from the blood stream. Of course, so much withdrawal of serum from the blood concentrates the blood thereby slowing circulation.

Sometimes in the more severe cases fluid collects in the peri-cardial, pleural, or peritoneal cavities so that it is impossible for the heart to carry on its work when the blood is so viscid it cannot return to the right side of the heart in sufficient amounts.

Hence with a lowered blood volume, increased viscosity, there is not a sufficient venous return flow. The heart must compensate for this change in the blood stream by an increased pulse rate.

If the right ventricle does not receive sufficient blood it is impossible for the left ventricle to receive enough for good contractions, hence the results are rapid contractions and small output.

In order for the heart to perform its work there must be a sufficient amount of oxygen, glucose, and insulin.

When the blood supply is reduced there is a reduction in all the important substances required for muscular contractions. With lessened venous return flow anoxemia tends to show itself, and this, of course, produces dilatation.

With dilatation and lessened diastolic filling the cardiac reserve is rapidly diminished. Hence, dilatation is frequently looked upon as an antemortem condition.

As long as oxygen, glucose, and insulin are supplied to the heart in sufficient quantities the heart will do its work.

You have been presented with a logical basis for heart failure. The answer to the question: "Does the heart fail?" is "Yes," but it does so only after collapse and failure of the peripheral circulation.

Treatment

The use of Digitalis in lobar pneumonia has been a debated question ever since the drug was introduced into medicine more than a century ago.

It was first used to replace phlebotomy in lowering the pulse rate. Traube in 1850 used digitalis because he believed it an antipyretic on account of its ability to slow the pulse, failing to recognize the fact

that if the pulse rate was slowed to the point of lowering the temperature the result was due to collapse.

Many clinicians have noted that digitalis does not in all cases slow the pulse in pneumonia and other infectious diseases. Hence, thinking that it was not effective in such cases, they fail to realize that digitalis may cause the heart to do more efficient work and not slow the pulse. This is true in non-febrile cases as well as the febrile cases.

Digitalis is not a heart stimulant in the sense that it can cause the heart to keep on beating when its nutrition is at a low point and there is little blood to pump. It acts on the heart muscle directly as an irritant, causing a greater contraction of the muscle; hence, a more forceful beat: this however is of little value if the volume of the blood is not up to normal.

As the toxins from the pneumococci are also irritating to the cardiac muscle, auricular fibrillation is sometimes the result. Hence, fluids should be given to lessen the toxicity of the body allowing the digitalis to restore a normal circulation and rhythm.

One should resort to digitalis only in cases of auricular fibrillation, auricular flutter, or when there is a know myocardial damage before the onset of the pneumonia.

Each patient should be watched and given that quantity of the drug required to fully digitalize him, and not give the drug according to weight as the toxicity of the heart muscle will sometimes counteract or even accentuate the effect of the digitalis.

According to theory, blood volume should be kept up to a normal level. This is accomplished by intravenous administration of normal saline solution, or citrated blood. Large amounts of saline may be given combined with 10 per cent glucose. One should not use over 4,000 C.C. daily. Insulin may be added to the solution. Other methods of introducing fluids into the body are by subcutaneous injection of proctoclysis.

Large amounts of fluids should be injected into the blood stream with caution. It is better to give intravenous treatment several times daily rather than inject a large amount of glucose into a heart that has already suffered muscular damage.

There are other useful drugs which may be used in treatment of the heart in lobar pneumonia. In severe cases of pneumonia where there is not enough healthy lung tissue to supply the body with oxygen the use of oxygen will add much comfort to the patient, will clear up cyanosis and will tend to slow the pulse rate, as the heart is forced to beat faster in order to keep a normal oxygen balance when the lung spaces have been lessened.

Coramine and adrenalin may be used as a stimulant for circulatory collapse without cardiac failure.

Pituition has no action on the heart itself but stimulates contraction of the smaller aterios and capillaries.

Alcohol is a vasamotor depressant and its indiscriminate use is not rational therapy. In the early stages it may allay anxiety and promote sleep, but morphine will do this more efficiently.

Pantopon is even a better drug in that it does not cause constipation as does morphine.

Although alcohol has no direct action on the heart it may cause peripheral circulatory failure if given steadily, by dilating the peripheral vessels and lowering the blood pressure.

In chronic alcoholics it may be used to prevent the onset of delirium tremens.

In conclusion it has been pointed out:

1. That the heart fails only after collapse of the peripheral circulation.
2. That circulatory failure may be prevented by keeping up the blood volume with the introduction of fluids into the body.
3. That the indiscriminate use of digitalis is not good therapy.
4. That many other drugs are more helpful than digitalis.

Dr. Elias Faison (Charlotte): Mr. Chairman: I was very much interested in Dr. Choate's paper, especially the second paragraph, wherein he mentioned that probably in the future we will be less concerned regarding the cardiac complications due to the serums that are coming out now that are definitely reducing the mortality rate in pneumonia.

I was also interested in the part concerning the use of digitalis. I would like to refer everybody who has any doubt regarding the indiscriminate use of digitalis in pneumonia to an article of Goodner, and Dubos in the October *Journal of A.M.A.* where they try the use of digitalis, after selecting their cases as equally as they could. They showed a definite reduction in the mortality rate of the patients who had digitalis and who had no evidence of auricular fibrillation or no evidence of decompensation beforehand. I think that if an individual is decompensated or on the verge of it, either before or in the beginning of pneumonia, that digitalis should, of course, be instituted. I don't think that you can give three pills a day for seven days a week as White advises in digitalizing the ordinary decompositing case. In seven days the pneumonia will have terminated with a crisis, and so, therefore, I think the individual should be digitalized with the hypodermic method. You can give large doses fairly hurriedly.

Also, a point he brought out that I think is well taken is, if the heart is furnished nourishment and a sufficient amount of oxygen that the heart will do its work, provided, of course, it is a normal heart. I think that is perfectly true, but so often we are prone to say "This is a short disease, doing fine"; and we are prone not to pay enough attention to the nourishment needed to care for the muscular contractions; that, of course, can easily be administered by using glucose in the vein or glucose hypodermic in the skin.

I enjoyed the paper very much. (Applause.)

Dr. F. R. Taylor (High Point): There is one thing I have noticed in my own practice that may be of practical value to some of you. There has been a good deal of discussion of intravenous treatment in an emergency. There is another drug which has been constantly accepted which is put out in small ampules called "scillae," and which seems to me to have this advantage over massive doses of digitalis: the amount given is so small and procures a strong effect in one cubic centimeter immediately, which cannot be given with the ordinary hypodermic syringe. It is used with an extremely small needle and it is no trick at all to get into even a small vein. As in the massive method of digitalization, it should not be given if the patient has had digitalization before; but I carry a small box of these tiny ampules as an emergency cardiac stimulant. I have seen at least three patients whom the doctor who called me had assured me were dying, who came back.

Dr. Allyn B. Choate (Charlotte): I have nothing further to say, thank you.

Chairman Taylor: The next paper is by Dr. Walter R. Johnson, of Asheville, on "The Value of the Galactose Tolerance Test in the Differential Diagnosis of Jaundice." (Applause.)

Dr. Johnson presented his prepared paper. (Applause.)

THE VALUE OF THE GALACTOSE TOLERANCE TEST IN DIFFERENTIAL DIAGNOSIS OF JAUNDICE

Walter R. Johnson, M.D.
Asheville, N. C.

The value of the galactose tolerance test in differentiation of medical from surgical jaundice has been well established by the series of papers which have followed the original ones (in this country) of Shay, Schloss and their collaborators in 1931 and 1932.[1] These investigators claimed that the test was almost invariably positive in catarrhal or toxic jaundice and just as unfailingly negative in obstructive jaundice. While more recent papers[2] have shown that the test is by no means infallible, they have at the same time indicated that in cases of obscure etiology the test may be of incalculable value in arriving at a correct diagnosis. Most of these more recent reports have dealt with the routine use of the test in large series of cases in an effort to assay reliability of the procedure. As a consequence, the test has been used in all types and degrees of jaundice, from exceedingly mild and transient cases of catarrhal jaundice to many months old cases of complete obstruction due to carcinoma of the head of the pancreas. It is almost too much to expect of any laboratory procedure that it be unfailingly accurate under such diverse conditions and such has been the case with the galactose test. Before condemning the test, however, it is well to remember that in a great many of the reported cases, diagnosis was

perfectly obvious before galactose tolerance was determined and consequently there was no real reason for exhibition of the test except the desire to prove or disprove its fallibility. When use of the galactose tolerance test is intelligently restricted to cases presenting deep, recent and painless jaundice in which there is doubt as to the etiology, the percentage of failures marked up against the test will be sharply reduced.

In the preceding paragraph we have spoken of medical and surgical jaundice. It might be well to indicate just what conditions are included in these categories. McNee,[3] some years ago, proposed that jaundice be divided into three groups: (1) Obstructive, in which there is obstruction of the extrahepatic bile ducts, due to stone, carcinoma, stricture and so on; (2) toxic and infectious (intrahepatic or hepato-cellular), in which the extrahepatic bile ducts are normal and patent, but in which there is some toxic, inflammatory, or degenerative process in the parenchymal structure of the liver; (3) hemolytic, in which the jaundice is due to excessive destruction of red blood cells, the liver and its ducts being essentially normal. It is immediately apparent that the obstructive group is composed of conditions which demand surgical treatment if jaundice is to be relieved. Toxic and infectious jaundice on the other hand is just as definitely a medical problem. Hemolytic jaundice is rarely confused with the first two groups and consequently does not come under consideration in this discussion.

In the vast majority of cases with jaundice (perhaps 70 to 75 per cent) diagnosis is more or less obvious as soon as a careful history and physical examination have been completed and in these cases, there is no need for the galactose tolerance test. In the remaining 25 or 30 per cent of cases more or less difficulty is encountered in attempting to decide whether the condition is primarily a medical or surgical problem. This is particularly true in those patients who present a painless type of jaundice and who belong to the middle or later age groups. In these patients the possibility of cancer or silent common duct stone must always be considered, but at the same time catarrhal jaundice or jaundice due to hepato-toxic drugs is so frequent an occurrence that rarely is the differential diagnosis an easy one. It is in precisely this group of patients that the galactose tolerance test is of greatest value.

The rationale of the test and the research work which preceded its adoption as a laboratory method have been clearly set forth in the earlier papers of Shay, Schloss and their co-workers. Consequently there is no need to restate their conclusions. A brief outline of the technic of the galactose tolerance test, however, will not be amiss.

Technic of the Galactose Tolerance Test

After an overnight fast, the patient drinks a mixture of 40 grams of galactose, dissolved in 300 to 500 cc. of ice water flavored, if desired, with lemon juice. The bladder is emptied at this time and the urine

discarded. At each succeeding hour for five hours, the bladder is completely emptied and each specimen is carefully saved in a separate container. At the end of the five hour period, a qualitative sugar test is made on each sample. Those specimens which contain reducing substances are then added together and a quantitative sugar determination is run on the conjoint specimen. The results of such a determination are then expressed as grams of sugar (or reducing substances, excreted.

(Because, under certain conditions, glucose is excreted in the urine together with galactose, Shay and Fieman[4] have recently suggested that a differential fermentation test be carried out on all specimens that show an excretion of more than 3 grams of sugar in the five hour period. It is regrettable that a test as simple as that for galactose tolerance should be complicated by this additional procedure. In the vast majority of instances, differential fermentation is unnecessary. Rarely, a false high excretion of galactose will be shown due to an abnormal excretion of glucose together with a normal amount of galactose. Practitioners who have access to a laboratory in which differential fermentation tests may be carried out should follow the suggestion of Shay and Fieman—others may continue to do without this refinement, realizing that the chance of error is relatively slight.)

Interpretation of the Test

It has been determined that the normal liver can metabolize 40 grams of galactose so rapidly and completely, that rarely is more than 1 or 2 grams of the substance excreted in the urine. When an acute and diffuse inflammatory or toxic hepatitis is present, galactose reducing power of the liver is lessened and large amounts (from 4 to 15 grams) of the test sugar may be found in the urine. In obstructive jaundice, integrity of the hepatic parenchyma is usually preserved and metabolism of galactose proceeds at the normal rate. Excretion of large amounts of galactose (from 4 to 8 or more grams) is almost certain evidence that an acute and diffuse hepatitis is the underlying cause of jaundice or in other words, that the jaundice is essentially a medical problem. On the other hand a normal excretion of galactose in the presence of deep jaundice indicates that an obstructive or surgical type of lesion is the cause of icterus.

Now, in the light of recent reports, can these statements be accepted as 100 per cent accurate? Unfortunately not, since either positive or negative errors are sometimes encountered. Thus, in mild cases of catarrhal or toxic jaundice, normal or borderline excretions of 2 to 3 grams are often seen. In such instances, the test should be repeated in a few days and if results are still indefinite, diagnosis must be based upon general clinical judgment and evidence presented by other tests. Occasionally in obstructive jaundice an abnormally high excretion of galactose is seen. In such instances the results of the test will be at

variance with conclusions reached by careful appraisal of history, physical examination and certain other laboratory procedures and thus an error in diagnosis can be avoided.

It goes without saying that one should not depend exclusively upon the galactose test for differential diagnosis. Other methods of investigation are important aids and should never be neglected when means to apply them are at hand. Such procedures as duodenal drainage, urobilinogen studies, serum bilirubin levels and fluctuations, cholesterol and cholesterol ester determinations and x-ray studies are all important and valuable adjuncts to the galactose tolerance test and should be utilized whenever possible.[5] Unfortunately, such procedures are beyond the reach of the average general practitioner and all too frequently beyond the reach of the patient's pocket book, and it is in the dilemma produced by such circumstances that the galactose test promises to be of special value. This test is so simple that it can be carried out in the home or in the doctor's office. It requires no special apparatus, no venipunctures, no specialized knowledge. It would be far better for the patient if the galactose test were the first laboratory procedure to be applied in the presence of jaundice instead of the icterus index test as is now the usual custom. The icterus index test indicates the depth of jaundice, but ordinarily the doctor's powers of observation have already given him a reasonably shrewd guess on this point and consequently the test tells him nothing. A strongly positive galactose test, on the other hand, tells him that there is widespread liver cell damage as the most likely cause of jaundice—a bit of knowledge which may save the doctor many anxious hours of worry and may protect the patient from an unnecessary exploration.

The worst thing that the critics of this test have said about it is that it sometimes gives false results. But what test does not occasionally fail us? Should we abandon the basal metabolism test because we obtain abnormally high readings in certain non-pathological cases? Should we stop doing leucocyte counts in cases of suspected acute appendicitis because occasionally a normal count is seen in conjunction with a violently inflamed appendix? A more sensible procedure is this: Use the galactose test early in the course of jaundice; use it because it is simple, cheap, and available to practically every physician. If the results of the test give unequivocal evidence of hepatic damage, treat the patient medically. If the excretion of galactose is in the borderline region, wait a few days and then repeat the test. If the result still is equivocal forget it, and base diagnosis upon other evidence at hand. Certain it is that if such a procedure be followed in those difficult cases, middle-aged people with painless jaundice, fewer mistakes in diagnosis will be made and more rarely will it be necessary to justify unnecessary exploration in patients with non-surgical jaundice.

As an example of the great value of this test, let me cite two recent

experiences. Case no. 1: The patient, a man of 65 years, had noted increasing weakness for about two months. For several days prior to the discovery of jaundice, he had felt distinctly below par because of anorexia and weakness. Jaundice was first noted on Saturday by a friend. The following Thursday, the patient felt so miserable that he entered the hospital of his own accord. He was definitely jaundiced, the icterus index being 70 and qualitative van den Bergh reaction direct. Blood studies and urinalysis gave no hint as to the cause of jaundice. Neither liver nor gallbladder could be palpated. On the following day, an x-ray study of the upper digestive tract was made and a diagnosis of carcinoma of the head of the pancreas was hazarded because of an apparent distortion of the second portion of the duodenum. Owing to the patient's age, the painless onset of jaundice, and the x-ray diagnosis, an exploratory laparotomy was advised. After consultation, however, it was decided to test the patient's tolerance for galactose. Twelve days after jaundice had first been noted, a galactose tolerance test revealed an excretion of 4.1 grams, but the specimens were discarded before a differential fermentation test could be performed. On this same day, the serum bilirubin level as measured by the quantitative van den Bergh method was 10 mgm. per cent. Duodenal drainage the following morning revealed no evidence of bile. Two days later a second galactose test was performed. Sugar was found in all five specimens, as had been the case with the first test, but the six hour specimen revealed no reducing substance. Differential fermentation, according to the technic suggested by Shay and Fieman, caused no change in the concentration of urinary galactose, the total excretion of which amounted to 4.18 grams. Traces of bile were recovered from the duodenum during the second duodenal drainage and the bilirubin dropped to 6 mgm. per cent. The value for total cholesterol at this time was 145 mgm. per cent. Four days later the serum bilirubin was only 3 mgm. per cent and the patient was clamoring to be allowed to return to his work.

Comment: In this instance, the clinical history suggested pancreatic carcinoma and the x-ray study apparently confirmed the clinical impression. Exploration would surely have been carried out had not the galactose excretion pointed to hepatitis as the cause of the jaundice. The further clinical course of the patient, low total cholesterol level, appearance of bile in the duodenal contents and decline in the serum bilirubin level all confirmed the testimony offered by the galactose test. Exploration in this instance would have proved the truth of the aphorism that too hasty a decision to operate in the presence of jaundice all to frequently means an unnecessary operation.

Case No. 2: The patient, a man of 43 years, had never experienced a serious illness before the onset of his painless jaundice. During a two weeks period, jaundice deepened and he developed a gassy indigestion, anorexia, lassitude, and some loss of weight. Examination at this time disclosed deep

jaundice. The liver was palpable a few centimeters below the coastal margin but neither the gallbladder nor the spleen could be felt. No abnormal masses, distended veins, or evidence of ascites were apparent. The gallbladder did not fill with dye on Graham-Cole examination. X-ray study of the gastrointestinal tract was negative. The blood factors were all normal except for a direct van den Bergh reaction. A diagnosis of carcinoma of the head of the pancreas with obstructive jaundice was made and the patient was explored surgically. The liver was found to be somewhat enlarged, the gallbladder was normal and no evidence of obstruction in the extra-hepatic bile passages could be discerned. A cholecystenterostomy was done on the theory that the obstruction might have been overlooked. The patient made an uneventful recovery from the operation but his jaundice failed to clear up. Seventeen days after operation the serum bilirubin level was 50 mgm. per cent and some bile was evident in the stools. Two weeks later the patient was still deeply jaundiced and after consultation, a galactose tolerance test was performed. An excretion of 4.5 grams of the test sugar was observed. A diagnosis of hepatitis was made and eventually confirmed by the gradual disappearance of jaundice and reëstablishment of perfectly normal health.

Discussion: In this instance, had the galactose tolerance test been used when the patient was first examined a high excretion of sugar would undoubtedly have been encountered and thus a wholly unwarranted exploration would have been avoided. It should be noted that this patient was inadequately studied pre-operatively. No attempt was made to determine whether or not the obstruction was complete. Rarely should a diagnosis of carcinoma of the head of the pancreas be made in the absence of complete obstruction of the bile channels. Had two or three duodenal drainages been done over a period of a week's time, it is probable that some trace of bile excretion into the bowel would have become apparent. If this measure had failed, daily study of the urine for urobilinogen or examination of the feces for bile pigment would doubtless have shown that the obstruction was incomplete. Instead of these tests, a Graham-Cole examination was made. This procedure should never be used in the presence of deep jaundice, first because the gallbladder fails to fill with dye and hence no information of value can be derived from it, and second because it is theoretically unwise to subject an already sorely taxed hepatic parenchyma to the possibly deleterious effects of a mildly hepato-toxic dye substance. By the same token, the gastrointestinal tract X-ray study might well have been omitted since it rarely gives information of value. The time and money expended on this examination would have paid for a week's hospitalization, during which conclusive evidence of the non-surgical nature of the jaundice could doubtless have been elicited, especially if the galactose test had been used.

Conclusions

(1) The galactose tolerance test should be used more widely in the study of patients with jaundice.

(2) Its use is especially advocated in painless jaundice occurring in the latter decades of life when difficulty is encountered in deciding whether the jaundice is medical or surgical in nature.

Bibliography

[1] Shay, H., Schloss, E. M., and Bell, M. A.: Metabolism of galactose; considerations underlying use of galactose in tests of function of liver, Arch. Int. Med., 1931, 47, 391-402. Shay, H., Schloss, E. M., anl Rodis, I.: Galactose tolerance test in differential diagnosis of jaundice, *ibid.*, 650-659. Shay, H., and Schloss, E.: Painless jaundice; its differential diagnosis by galactose tolerance test, Jour. Am. Med. Assoc., 1932, 98, 1433-1436.

[2] Tumen, H. J., and Piersol, G. M.: Value of alimentary galactosuria in diagnosis of jaundice, Ann. Int. Med., 1933, 7, 311-329. Schiff, L., and Senior, F. A.: A study of one hundred cases of jaundice, with particular reference to galactose tolerance, J. Am. Med. Ass., 1934, 103: 1924. Banks, B. M., Sprague, P. H., and Snell, A. M.: Clinical evaluation of the galactose tolerance test, Jour. Am. Med. Assoc., 1933, 100, 1987-1993. Rosenberg, D. H.: The galactose and urobilinogen test in the differential diagnosis of obstructive and intrahepatic jaundice, Ann. Int. Med., 1934, 8, 60-71. Bensley, E. H.: The galactose tolerance test as an aid to diagnosis in jaundice, Canad. Med. Assoc. Jour., 1935, 33, 360-363.

[3] McNee, J. W.: Quart. Jour. Med. 1923, 16: 390. Rolleston, H. D., and McNee, J. W.: Diseases of the Liver, Gallbladder and Bile Ducts, 1929, 3d Ed. London: MacMillan Co., Ltd., p. 568.

[4] Shay, H., and Fieman, P.: The galactose tolerance test in jaundice; a consideration of the evidence permitting the measurement of galactose utilization by urinary excretion; some sources of error in its interpretation, and an addition in routine technic. Ann. Int. Med., 1937, 10, 1297-1303.

[5] Johnson, W. R.: The Differential Diagnosis of Painless Jaundice, South. Med. Jour., 1937, 30, 1174-1181.

Dr. Elias Faison (Charlotte): Mr. Chairman: I think all of us are agreed that a galactose tolerance test is of benefit. In the first place, they tell us of the presence and of the extent of the disease in the liver. They differentiate the type of disease and they allow us to prognosticate the course of the disease. The galactose tolerance test experimental work in this country was a little reluctantly started. Lately, however, our literature is fairly replete with reports concerning the test. I think this paper of Dr. Johnson's and others is sufficient evidence to impress us with the importance of the galactose tolerance test in differentiating between infectious type of jaundice and those due to obstruction.

Now, I think he stressed the fallibility of the test sufficiently enough; but I am of the opinion that if the histology of the liver, the normal physiology, and the etiology were studied more astutely, perhaps the failures would be appreciably decreased. For instance, the unit structure of the liver has to do with the conversion of the galactose into sugar and also with the storage of the same. Now, in cases of infectious or toxic jaundice the liver cells are damaged. However, if they are damaged insufficiently enough to produce a diffuse hepatitis one would naturally expect a negative galactose tolerance test. If they were damaged sufficiently enough to produce a diffuse hepatitis, they would expect a positive galactose test. In the type of cases that are due to stone, of course, the liver cells are not yet damaged and why should we then expect a positive galactose tolerance test? Later, however, in the cases of obstructive jaundice where due to the profound stages, and possibly

some associated infection, the liver cells are damaged, of course, then we would expect a positive galactose tolerance test as in the other series of the infectious jaundice.

I, personally, can see no reason why a patient should be hurried to the operating room because of jaundice; and I think if we would defer sending these patients to the operating room until they can be studied by the galactose tolerance test, possibly with the urobilinogen test and other tests, that we would have less instances of unnecessary surgery performed—as he has so noticeably stressed in this paper. (Applause.)

Dr. Robert Morehead (Wake Forest): I think this is a very timely report on this test because I think within the last twelve months the galactose tolerance test has withstood the test that all laboratory procedures have to undergo. Those of us who are interested in clinical biophysiology are rather hesitant to accept any new laboratory procedure. But along with the study of the icterus index, the urobilinogen, and the Graham-Cole dye test we added, I note, this year the galactose tolerance test for the first time and now include it among the studies for jaundice, obstructive and non-obstructive. Of course, as Dr. Johnson pointed out, one must understand and study the mechanism of this test before it can be fully appreciated.

Another thing is its availability. So many laboratory procedures are not available, of course; and every physician can't do the urobilinogen test and several other complicated laboratory procedures, but this test is available to everyone, and probably is the most simple of the liver functioning tests, and should be used by every physician. (Applause.)

Dr. Walter R. Johnson (Asheville): Mr. Chairman, I am very much indebted to Dr. Faison and the doctor from Chapel Hill for their discussions.

This galactose test is a pet of mine. I am very fond of it. It has gotten me out of a number of very nasty jams where the situation was such that it boiled down to this: either the patient was going to be operated on or he was not going to be operated on, and the decision rested largely upon the galactose tolerance test. If the test will save you from doing one unnecessary operation, it is worthwhile; and consequently I feel that the test should be used very much more widely.

I am indebted to both these gentlemen for pointing out in greater detail the physiological conception upon which the test is based. But it boils down to this: you give a man a batch of sugar—40 grams of it—if he excretes 8 or 10 grams, don't operate on him. On the other hand, if he has a very deep jaundice you give him this sugar test and if he excretes only 1 gram the chances are he has a stone tucked away somewhere. That is the one situation in which this test is of value.

It should only be used to distinguish medical from surgical jaundice. (Applause.)

Chairman Taylor: The next paper is by Dr. G. L. Donnelly, of Chapel Hill, on "Sulfanilamide—Pharmacology and Therapeutics." (Applause.)

Dr. Donnelly presented his prepared paper. (Applause.)

SULFANILAMIDE—PHARMACOLOGY AND THERAPEUTICS

G. L. Donnelly, M.D.
Chapel Hill, N. C.

During the short lifetime of sulfanilamide, between 500 and 1,000 papers have appeared in the literature concerning it. This present study attempts only to present an abbreviated summary from information contained in some 50 papers selected from a list of nearly 200 papers read.

At no time in the history of medicine has any chemical agent created more zealous study among medical people with a greater mixture of enthusiasm and disappointment than has the sulfanilamide group of compounds. When one considers the number of diseases in which members of the group have been used rather blindly, if not carelessly, with varying criteria for dosage, and with still less knowledge of the mechanism of action, and overaction, it can be understood why results have been far from uniform. It is certainly much safer for the patient if we await the accumulation of properly controlled experimental and clinical studies for the basis of our own therapy.

When one studies the list of diseases in which sulfanilamide compounds seem to have value, one finds that list to be rather small, and the number of patients not too large. However, it must be remembered that carefully controlled studies accumulate slowly, and that sulfanilamide at the age of two years is still in a stage of infancy.

Perhaps the largest group of studies concerning curative action is to be found in the field of Urology, mainly with gonococcus infections. Here widely scattered papers[1-9] have reported apparent cures ranging from fifty to ninety-five per cent among many hundreds of cases. These have varied from simple acute conditions to those of a chronic, complicated nature. It is interesting to note that in those patients who were hospitalized, results were much more uniform.

In gonorrheal ophthalmia in children and in adults, the reported number of cases[10-14] is small — twenty-five, including two adults—but it is encouraging to note that there were twenty-two prompt recovies with one failure in a baby unable to tolerate sulfanilamide.

Three reports[15-17] on gonorrheal vaginitis in children are noted in which six complete recoveries resulted from the use of sulfanilamide.

Encouraging results have come from the use of sulfanilamide[18-20] in pyelitis. In over 300 treated cases it is evident that infection from the colon bacillus responds very readily to the drug. The same is true for other bacillary types of infection.

Reports[21-25] on eight cases of undulant fever have been read. The small number of cases, along with other factors, would seem to require further study before sulfanilamide can be accepted as a cure for undulant fever of the Brucella type.

One hundred and fifteen cases of malaria have been reported[26-27] as successfully treated with a diazo compound of sulfanilamide.

The most dramatic results from the use of sulfanilamide have been reported[28-38] for the successful treatment of meningitis, both from hemolytic streptococcus and meningococcus. A total of ninety-three cases of meningitis, all forms, in children and adults, were treated with sulfanilamide, and out of this number there were eighteen deaths. At least eight of these were not due to a failure of the drug. Of ninety-three cases of meningitis, fifty-seven were caused by hemolytic streptococcus with thirteen deaths; twenty-nine were caused by meningococcus with four deaths; seven were miscellaneous types with one death from pneumococcus and influenzal infections. Approximately seventy-five per cent were in children. This record of recoveries is remarkable when one considers the statement of Neal and Applebaum that up to the end of 1936 they had seen 274 cases of streptococcal meningitis with fifteen recoveries.

In addition to the apparently favorable results from sulfanilamide in the diseases mentioned, with bibliography, the drug is being used in many other conditions concerning which the literature is rather indefinite but hopeful. Some of these are pemphigus, gas gangrene, experimental septicemia, Ludwig's angina, puerperal fever, gynocological conditions, virus diseases, peritonitis, complications of scarlet fever, mastoiditis, nose and throat conditions, as well as many others.

It is of especial interest to note that Dochez and Slanetz[39] have successfully treated canine distemper, a filterable virus disease, by using sodium sulfanyl sulfanilate.

Rosenthal, Wooley, and Bauer[40] have shown that prontosil is active against choriomeningitis virus in mice.

Rich and Follis[41] at Johns Hopkins have demonstrated a marked difference between the pathology of tuberculous guinea pigs treated with sulfanilamide, and an untreated control group.

The mode of action of sulfanilamide compounds, in spite of many experimental studies, remains an unexplained phenomenon. It has been shown that sulfanilamide in the test tube is bacteriostatic for certain organisms. However, it is not the impression of investigators that bacteriostatic action is the entire explanation for the remarkable results brought about in certain diseased conditions. Experimental studies have

been made by different investigators in an attempt to determine the mechanism of action. Certain conclusions have been drawn by these investigators, which though not in agreement, may throw some light on the subject.

Osgood[42] has studied the action of sulfanilamide on bone marrow cultures infected with beta hemolytic streptococci. The most important action of the drug seemed to be that it destroys the bacterial toxin. While sulfanilamide does not appear to kill the streptococci, it permits full activity of the bacteriocidal properties of the serum, and, to some extent, phagocytosis of the leucocytes to kill streptococci. Apparently there is no direct effect on phagocytosis either through the action of sulfanilamide on streptococci or on the marrow cells.

Long and Bliss[45] thought sulfanilamide exerted some bacteriocidal effect in vitro, and that peritoneal fluid of treated mice showed a polymorph response with active phagocytosis, followed in twenty-four hours by a gradual increase in lymphocytes and monocytes.

Gay and Clark[44] believe, from their experiments, that sulfanilamide plus serum inhibits the growth of streptococci for a period long enough to allow for their destruction by the phagocytes.

Finklestone, Spyless, and Payne[45] found that sulfanilamide actually stimulated growth of young streptococci in blood for a short period, after which there was a rapid decrease in the number of streptococci. By using a layer of water and a layer of lipoid extracted from streptococci, they found that the sulfanilamide passed from the water to lipoid. This suggested to them that the substance might be more highly concentrated in the streptococcus.

Edw. Hoare[46] thinks that the bacteriocidal and the bacteriostatic actions are to a large extent independent of phagocytic activity. He had nine patients treated with sulfanilamide, of whom five developed killing power against streptococci within one hour after the first dose. With normal human blood to which sulfanilamide had been added, the effects on streptococci were about the same. Strains of streptococci not susceptible to sulfanilamide in patients were not susceptible to the drug added to normal blood. When the drug concentration is low, the blood kills more streptococci than does serum containing it. This, he thinks, is due to the leucocytes. Conclusion: if sulfanilamide concentration is high it is the important factor; if not high, the leucocytes are more important.

Buttle[47] observed that if streptococci are grown in monkey blood to which sulfanilamide is added, the streptococci grow for two hours and growth stops. If leucocyte free blood is used, the number of streptococci remain the same in number, but in the presence of leucocytes the number of streptococci falls to almost zero. His deduction is that there are two definite effects: one bacteriostatic and the other phagocytic.

The varying conclusions of different observers, drawn from experi-

mental data, serve to show how difficult it is to arrive at an accurate determination of the mode of action of sulfanilamide. It seems logical to assume, however, that the mechanism of sulfanilamide action must be explained on the basis of a combination of factors—some known and others not known.

Before any intelligent progress could be made in the use of sulfanilamide for the treatment of disease, certain types of experimental information had to be made available. Facts must be known concerning absorption—the rate, the place of, and any chemical changes which might take place after absorption. A knowledge of the distribution of the substance in different tissues with the effects on those tissues, the rapidity of the rate at which it reaches tissues, and the channels through which it travels, are all factors of fundamental importance. Of no less import is excretion—the time, the rate and the form in which the original product is excreted. Another question to be answered: what are the toxic manifestations, and what may be their effects on the life processes of the organism into which they are introduced?

E. K. Marshall, Jr., and his associates[48-53] have made by far the greatest contribution to this type of information. They have found that sulfanilamide is almost completely absorbed from the intestinal tract of the dog in from three to five hours. After absorption into the blood, the substance passes quite rapidly into the tissues where it is equally distributed to all tissues except bone and fat. Sulfanilamide is found in cerebro-spinal fluid in slightly lower concentration than in blood, and that within a short period of time. Excretion takes place through the kidneys in from twenty-four to forty-eight hours. In the dog the substance may be recovered from the urine unchanged, but in the rabbit, and in man it is in part conjugated as para-acetylaminobenzinesulfonamide or acetyl sulfanilamide. Only small amounts of the conjugated substance, which is practically inactive against hemolytic streptococci, is found in the blood. Marshall investigated the effects of sulfanilamide on different tissues (liver, kidney, spleen, heart, testes, ovary, adrenal, thyroid, and bone marrow) of rats and found them to be normal. No effect on the blood picture in rabbits and dogs was seen after large doses given for several days. It was noted, however, that in dogs large doses over a period of several days produced an acidosis due evidently to an alkali deficit.

A rather extensive literature has grown up concerning the toxic manifestations of sulfanilamide. In animals Marshall has not found it toxic except in rather large amounts. Of seven dogs given one gram per kilo—20 grams in a 45-pound dog—one showed no symptoms and another only slight ataxia. The five remaining dogs "exhibited moderate or severe symptoms of poisoning — salivation, vomiting, diarrhea, hyperpnea, excitement, muscular weakness, ataxia, signs of stimulation and depression of the central nervous system leading to a condition of spastic

rigidity of the limbs and hypesthesia." Of nine dogs receiving doses from 1.6 to 2 grams per kilo, only one died, and the symptoms in the others were no more severe than in animals receiving smaller doses. From Marshall's observations one may judge that the blood concentration is a more accurate index to possible toxicity than the mere size of the dose, a part of which may not be absorbed. In blood concentrations of under thirty mg. per hundred cc. of blood no symptoms were observed; mild excitement, weakness and slight ataxia may be noted at forty mg. per 100 cc. blood; and over 100 mg. per 100 cc. blood, coma, marked rigidity, and later complete paralysis. As mentioned before, there was no evidence at autopsy of damage to any of the tissues in rats following sulfanilamide.

In a fairly large percentage of patients treated with sulfanilamide certain toxic symptoms are present. The most common of these are dizziness, nausea, headache, excitement, confusion, and cyanosis. Marshall thinks "the cerebral symptoms (dizziness, nausea, headache, excitement, and confusion) the acidosis, and the cyanosis appear to be direct toxic effects of the drug, while the acute hemolytic anemia, and the possible agranulocytosis must at the present be regarded as idiosyncrasies." He classes those patients as sensitive or hypersensitive who do not tolerate small therapeutic doses. When a patient shows a response of an abnormal character not given by other patients after very large doses, such response may be termed idiosyncrasy.

One of the most common signs of sulfanilamide over-action is cyanosis. This was generally assumed to be due to the presence of methemoglobin or sulfhemoglobin. However, it has usually been noted that with such cyanosis a patient might be very dusky in hue, and yet show no signs of dyspnea or oxygen want. Marshall and Walzi[55] could not demonstrate either methemoglobin or sulfhemoglobin in a series of seventeen cyanotic patients. Moreover, they could find no appreciable decrease in the oxygen-carrying power of the blood, such as would be expected when these conditions exist. Their theory was that the dusky hue might come from condensation products of aniline formed in the body.

Claude Remington[54] has found that in sulfanilamide treated rats, abnormal amounts of porphyrin, nine, seven, and two times normal, appeared in the urine. Coproporphyrin was also excreted in the urine. The excretion of coproporphyrin would indicate that the mechanism of hemoglobin synthesis and pigment metabolism are susceptible to the action of sulfanilamide, and the possible bearing of such action on some of the toxic effects of man as agranulocytosis, sudden anemia, and light dermatitis is obvious. Such conditions as colic, vomiting and headache usually attributed to met- and sulf-hemoglobinemia are seen also in acute porphyrinuria.

While experimental data of Marshall show that sulfanilamide is nontoxic in the sense that it does not injure tissues, its use is most cer-

tainly not without danger. This danger lies with those patients who are sensitive to small doses or the ones who have an idiosyncrasy for larger doses. With careful supervision and the availability of facilities for combatting the more severe reactions, the danger seems relatively not great.

Sulfanilamide may be given by mouth with great effectiveness and, as before mentioned, reaches the blood stream quite rapidly. The maximum dose for the first day is six grams (90 grains) divided into four doses given at intervals of four hours. Doses for succeeding days are half the amount for the first day. It is to be noted that an effective blood concentration runs around 10 mg. per cent, and should not be allowed to go over 20 mg. per cent. Alyea (4) suggests a fluid intake of 2,000 cc. daily as an aid in keeping the blood concentration of the drug uniformly balanced. Sodium bicarbonate by mouth should be given to prevent acidosis. Magnesium sulfate should not be given at any time during the treatment. Sulfanilamide may also be given in 0.8 per cent solution subcutaneously where conditions are not favorable to oral administration.

In the treatment of meningitis, opinion is divided as to the channels of administration. Marshall notes that sulfanilamide in animals and patients reaches the spinal fluid rapidly, and in satisfactory concentration when given by mouth. However, Jauerneck and Gueffroy[32] say that in meningitis there is a delay in the time it takes sulfanilamdie to reach the spinal fluid, and one or two days may elapse before the drug is present in demonstrable quantities, in some cases as low as 0.01 mg. per 100 cubic centimeters of fluid. Of 7 purulent cases of meningitis treated with sulfonamide compounds by mouth and intramuscularly, only 2 mild cases recovered.

Bibliography

Gonorrhea

[1] Colston, Dees and Harrill, South. M. J. 30:1165, Dec. 1937.
[2] Symposium, Brit. M. J. 2:1038, Nov. 20, 1937.
[3] O'Hanlon, O. J., Brit. M. J. 2:877, Oct. 30, 1937.
[4] Alyea, Daniel and Harris, South. M. J. 31:395, April 1938.
[5] Van Slyke, Thayer and Mahoney, Venereal Disease Inform. 18:417, 1937.
[6] Mathe and Spitalny, Urol. and Cutan. Rev. 42:79 (1938).
[7] Helmholz and Osterberg, Proc. Staff. Meet., Mayo Clinic, 12:444, June 1937.
[8] Orr, H., Can. Med. Assoc. J. 37:364, Oct. 1937.
[9] Durel, M., Presse Med. No. 99:1781, Dec. 11, 1937.

Gonorrheal Ophthalmia

[10] Newman, H. W., Texas State J. Med. 33:585, Dec. 1937.
[11] Willis, Thayer, Yale J. Biol. Med. 10:275, March 1938.
[12] Dollfus, M. A., Presse Med. 46:476, 1938.
[13] Pages, R. and Duguet, Presse Med. 46:476, 1938.
[14] Magitot, A. M., DuBois-Paulsen, A. and Geoffroy, Y., Presse Med. 46:476, 1938.

Gonorrheal Vaginitis

[15] Brown, Kathleen, Brit. Med. J. II, 1039, 1938.
[16] Schulbert, M., Dermatol. Wochschr, 106:1549, 1937.
[17] Martin, Rene, Presse Med. 46:477, 1938.

Pyelitis

[18] Long and Bliss, South. M. J. 31:308, March 1938.
[19] Cook ad Buchtel, Proc. Staff Meet. Mayo Clinic 12:444, July 14, 1937.
[20] Kenny, Johnston and Haebler, Lancet, 2:119, July 17, 1937.

Undulant Fever

[21] Richardson, L. A. (2), Lancet 5974; 495, Feb. 26, 1938.
[22] Lloyd, J. H. (1), Brit. Med. J. I, 4019; 145, 1938.
[23] Francis, A. E. (2), Lancet 234 No. 5974:495, 1938.
[24] Page, W. A. (1), Brit. Med. J. I, No. 4027:594, 1938.

[25] Bethoux (2), Presse Med. No. 90:1591, Nov. 10, 1937.
Malaria
[26] Hill and Godwin, South. Med. J. 30:1170, Dec. 1937.
[27] Leon, A. D., Pub. Health Reports, Wash. 52:1140, Oct. 15, 1937.
Meningitis
[28] Flake and Carey, New Eng. J. Med. 217:1038, 1937.
[29] Neal and Applebaum, Am. J. Med. Sci. 195:175, Feb. 1938.
[30] Schwentker, Gelman and Long, J.A.M.A. 108:1407, 1937.
[31] Eldahl, Lancet 5978:712, Mar. 26, 1938.
[32] Jauerneck and Gueffroy, Klin. Wschr. 1, 1544 (1937).
[33] Hageman and Blake, A. Jr. M. Sci. 195:163, Feb. 1938.
[34] Schwentker, Clawson.
[35] Morgan, Lindsey and Long, Bul. J. Hop. Hosp. 60:297, Apr. 1937.
[36] Cawthorne, Lancet 5971:304, Feb. 5, 1938.
[37] Willein, L. J., J.A.M.A. 110:630, 1938.
[38] Arnold, J. G., Ann. Int. Med. 10:1198, Feb. 1937.
Virus Diseases
[39] Dochez and Salentz, Science 87, No. 2250:142, 1938.
[40] Rosenthal, Wooley and Bauer, Pub. Health Reports 52 No. 36:1211, Sept. 3, 1938.
Experimental Tuberculosis
[41] Rich and Follis, Bul. J. Hopkins Hosp. 62:77, Jan. 1938.
Mode of Action
[42] Osgood, J.A.M.A. 110:349, Jan. 29, 1938.
[43] Long and Bliss, J.A.M. 108:32, Jan. 2, 1937.
[44] Gay and Clark, J. Exp. Med. 66:535, Nov. 1937.
[45] Finklestone, Sayless and Payne, Lancet 2:792, Oct. 2, 1937.
[46] Hoare, Lancet 234:655 (1938) No. 5577.
[47] Buttle, Proc. Roy. Soc. Med. 31:154, 1937.
Absorption—Distribution—Excretion—Toxicity—Administration
[48] Marshall, Emerson and Cutting, J.A.M.A. 108:953, 1937.
[49] Marshall, Proc. Soc. Expr. Biol. & Med. 36:422, 1937.
[50] Marshall, Emerson and Cutting, J. Pharmacol. & Exper. Therap. 61:196, 1937.
[51] Marshall, Emerson and Cutting, J. Pharmacol. & Exper. Therap. 61:191, 1937.
[52] Marshall, Cutting and Emerson, J.A.M.A. 110:252, 1938.
[53] Marshall, E. K., Jr., Med. Ann. Dist. of Columbia, Vol. VII, No. 1, 1938.
[54] Remington, Claude, J. Soc. Chem. Ind., 57:87, Apr. 1938.
[55] Marshall, E. K., Jr., and Walzi, Bull. Johns Hopkins Hosp. 61:140, Aug. 1937.

Dr. W. M. Coppridge (Durham): I think Dr. Donnelly's paper is very timely. I enjoyed it a great deal, and I am sorry there were not more here to hear it. There is certainly nothing I can add to his complete summary of the action of this drug.

As he says, I believe it has not definitely been decided just how the drug acts; but he has certainly given us a good resumé of the work that has been done on the study.

In urology we find a great use for sulfanilamide. We have been using it now for about fourteen months. Our first experience with it, of course, was in the treatment of gonorrhea. I don't believe that our results in the treatment of gonorrhea have been as good with the drug as we hoped they would be in the beginning. As you remember, the first report that came out, I think, stated that we could expect between 70 and 80 per cent cures. That has not been our experience. I don't believe that we can say that more than 30 per cent of the people that we see are definitely cured by the drug. Now our experience may not be just what it is with the general man, because we see a good many cases that have been treated before they come to us. It is possible that we see a good many cases that other folks have failed with. There are probably 30 or 40 per cent more cases that are definitely improved. We feel confident that between 60 and 80 per cent certainly have a very marked effect from sulfanilamide. In the rest of the cases, from 20 to 30 per cent, we have been able to notice no effect whatever from the drug. Just why it is, we have no explanation for. I have seen a number of cases of gonorrhea that we

treated back about this time last year that responded splendidly to sulfanilamide. They were cured at once—that is within a week or ten days. Then six months later they contracted a new case. The second time they had no effect whatever from sulfanilamide. We have noticed in several patients that they received a good effect the first time and none the second.

Sulfanilamide is certainly the most powerful urinary antiseptic that has been introduced. I think it ought to be tried in practically all cases of acute urinary infection as an antiseptic; and it can also be used in chronic cases as long as we use the drug simply to control the infection, realizing that there is something else behind the case besides the infection. If we use methacetin and sulfanilamide, and these drugs with that idea in view, I think we will save ourselves a good many mistakes; because we, ourselves, have used it in acute urinary infection, to find out later that we are dealing with stone in the kidney.

It has been a great boon to our local surgery. For the last six or eight months we have been putting most of our operating cases on sulfanilamide previous to operation in moderate doses, and keeping it up after operation. It has cut down a lot of infection in the kidney. Infection was our greatest trouble. With sulfanilamide we are able to handle infection following the operation much simpler than we have ever been able to do before.

We have had all the common reactions, but we have never had a serious one—I mean one that would not clear up when we stopped the drug. The dosage has usually been from 40 to 80 grains a day. We insist on seeing the people every few days to give instructions as to how to use the drug. I think fully 50 or 60 per cent of the people we give it to show some type of reaction, but none has been serious.

I enjoyed Dr. Donnelly's paper. (Applause.)

Dr. F. R. Taylor (High Point): I know of a very interesting case with a Negro who was being treated for gonorrhea. After being given sulfanilamide he went totally blind within 72 hours. He was sent down to Duke, and the consensus of opinion of all who saw him was that it was sulfanilamide poisoning. However, he came back home — but before leaving Duke he had a total absence of sulfanilamide. His blood pressure had abnormally shot up to 200, and he had a convulsion. We put him in the hospital and, knowing there was no sulfanilamide in his blood, we gave him magnesium. He came out of the coma and his blood pressure came down, and he got over that attack. But he continued to have headaches, and also paroxysms of vomiting. He vomited a distance of seven feet by actual measure. So we sent him back to Duke. We found nothing wrong with him. They found nothing wrong, and started to send him home, but before he reached the bus station he went into convulsions. The doctor found his spinal fluid pressure to be 300. He has been sent home, and has remained normal ever since. Dr. Gray believes that

it was a case caused by various infections—not a progressive thing—and he is probably over it. But it was a very confusing thing. We want to be sure before putting anything down to the effect of sulfanilamide, just as we want to be careful not to use sulfanilamide indiscriminately.

Dr. G. L. Donnelly (Chapel Hill): I would just like to reëmphasize the fact that sulfanilamide is so extremely new, and has been perhaps so over-used that it has attached to it in many circles a stigma; and in a great many cases not due to the actual sulfanilamide, just as our Chairman has noted in one particular case.

There are, in addition to the ones I mentioned, a great many other conditions in which the use of sulfanilamide seems to offer some hope for diseased conditions. In erysipelas and others from which the patients recover anyway the statistics are rather difficult to valuate. Certainly, in some of these cases perfectly phenomenal results have been noted by different clinicians.

I think as times goes on, sulfanilamide, undoubtedly from the papers I have examined, will become one of the most important of chemical agents in the treatment of disease, and certainly one of the greatest life-saving agents we have seen in a period of 50 years. (Applause.)

Chairman Taylor: At this time I will ask Dr. Gilmore, of Greensboro, if he will take the Chair, please.

Dr. Gilmore: The next paper on the program is by Dr. Frederick R. Taylor, "The Neurological Aspects of Serum Sickness." (Applause.)

Dr. Taylor presented his prepared paper. (Applause.)

THE NEUROLOGICAL ASPECTS OF SERUM SICKNESS*

F. R. Taylor, M.D.
High Point, N. C.

Introduction

While comparatively infrequent and rather seldom discussed in the medical literature outside of France, the neurological aspects of serum sickness are of sufficient frequency and severity to merit serious attention. Heretofore they have been ignored almost entirely in most of the standard American works on internal medicine. My personal experience includes a number of cases of neurological conditions consequent upon serum administration. I failed to recognize the significance of two of my earliest cases, being ignorant of the literature on the subject at the time. My first patient was a woman who had been treated

* The bulk of this paper is incorporated in a general article on Serum Sickness which has just appeared as a new chapter in the Oxford Loose-Leaf Medicine and is copyrighted by the Oxford University Press, New York. Read by permission of Dr. H. A. Christian, Editor-in-Chief.

for postoperative tetanus with massive doses of antitetanic serum a few years before coming under my observation. She complained of intractable pains in the neck, upper back and shoulders, which began during her convalescence from tetanus and had persisted since. No method of treatment had given relief and she finally despaired of help from physicians and became a morphine addict for many years. My second patient was referred to me because of pains in the arms and bilateral atrophy and flaccid paralysis of the muscles of the shoulder girdle associated with a lesser degree of involvement of the legs developing shortly after a prophylactic injection of 1,500 units of antitetanic serum. In a neurologic clinic given before the Guilford County Medical Society I solemnly demonstrated this patient as a case of progressive spinal muscular atrophy and expressed the opinion that the serum injection was purely coincidental. He recovered completely in a few months. More recently I have seen a woman with bilateral intermittent root pains in the distribution of the brachial plexus and weakness of the muscles of the shoulder girdle following prophylactic antitetanic serum, and another case of generalized convulsions and unconsciousness in a young man after a similar dose, the convulsions not being characteristic of tetanus and yielding to a single dose of magnesium sulfate intravenously. A flaccid paraplegia developed, with severe neuritic pains in the lower extremities, clearing up almost completely in about a year. In addition to these cases, I have knowledge of some others through the courtesy of Dr. George T. Wood of High Point. Of special interest was the case of a physician who received a prophylactic dose of antitetanic serum at an internationally famous clinic who developed serum urticaria five days after the injection, and in another five days began to suffer violent pains with muscular atrophy and paralysis, fibrillary twitchings of the muscles involved, patches of anesthesia, etc., with recovery after a few months. Another patient with a similar picture involving the shoulder girdle muscles complained of the bizarre symptom of smelling a horse during the four months of her illness.

History

In 1897 Englemann noted the association of neurologic disturbances with serum injections, as did Grünberger in 1904 and Gangolphe in 1908. These writers, however, did not make clear any etiologic relationship between the serum and the syndrome. According to Allen, Thaon was the first to recognize this in 1910, but his publication attracted little notice. Since that time numerous reports have appeared in the French literature and a few from other parts of Europe and from North and South America. It is interesting to note the increasing frequency of these reports in the five year period of 1931-1936, despite the increasing refinement and concentration of the medicinal sera. According to Young, Pétit published the most exhaustive treatise on our subject in

1925. In 1933 Demme noted the rarity of neurologic phenomena in serum sickness in Germany in contrast to their frequency in France.

Etiology

Apparently almost any foreign serum may produce neurologic symptoms, though I have not found any cases in the literature ascribed to normal horse serum or to gas gangrene or botulism antisera. However, antitetanic serum unquestionably is the chief offender. Even small prophylactic doses of 1,500 units seems to cause about as much trouble as massive therapeutic doses of any serum. Mignot states that the size of the dose is of no significance with regard to neurologic complications. Gordon has reported two cases resulting from prophylactic scarlet fever antitoxin, and takes the rather extreme position of suggesting that a patient, before having any serum administered, should be required to sign a statement relieving the physician from the consequences thereof. This probably would cost many lives through creating an excessive fear of the most indispensable therapeutic and prophylactic sera and would seem to be a mistaken policy except in unusual cases.

Besides tetanus and scarlet fever antisera, reports of neurologic phenomena due to many others have appeared, including pneumococcus, meningococcus, dysentery, diphtheria, a serum given for tuberculosis (Young), etc. In addition to these similar phenomena have occurred following the use of typhoid and staphylococcus vaccines. The paralyses following antirabic vaccine are well known, and encephalitis is a very rare complication of smallpox vaccination. As these last two are living viruses, the pathogenesis may be different, in some instances at least, from that of serum sickness, as it is conceivable that they might give rise to actual infectious processes in the nervous system. However, some recent work of Dr. Harold M. Horack suggests very strongly that most, if not all of the untoward reactions to antirabic vaccine are allergic in nature (personal communication from Dr. Horack). Foster Kennedy sums up the whole situation well when he says, "When all is said and done, these are rare accidents and but a small price to pay for the inestimable benefits obtained by serum therapy in general."

Pathology

The nervous system and the skin are both derived from the ectoderm and both appear to be susceptible to untoward effects from the injection of foreign sera. Some writers have suggested the possibility of a dual effect from direct toxicity to nerve cells or their processes, and from urticarial wheals or edema in the nerves or perineural structures causing pressure phenomena; the weight of opinion today favors the latter factor as the more important, if not the sole one. This view is supported strongly by those cases in which the pains and paralyses are intermittent, suggesting pressure from fugacious recurring wheals or edematous

areas, as in a case I observed recently. Roger, Mattei and Paillas believe a meningoradiculitis to have been the essential pathologic condition in the cases studied by them. Dechaume and Croizat in experimental "chronic anaphylaxis" in rabbits found both hemorrhagic and non-hemorrhagic lesions in the nervous system. The hemorrhagic lesions were of two types, (1) localized hemorrhages confined to the perivascular sheaths and (2) hemorrhages infiltrating the neighboring parenchyma. The non-hemorrhagic lesions consisted of small scattered areas of encephalomalacia.

Symptomatology

This is varied. The cases fall into two main groups, the *peripheral* and *central,* according to the site of the lesions in the nervous system.

The *peripheral* cases are more frequent and may be subdivided as follows:

1. *Radicular Type.* This is the most frequent form of all and includes the classic type. Nerve roots are involved, usually motor and sensory, though either may be affected alone, with the usual radicular distribution of symptoms and signs. The involvement may be unilateral or bilateral, more often the latter, though the symptoms rarely are equally well marked on the two sides. The classic type affects the upper extremities, especially the deltoid, supraspinatus and infraspinatus muscles. Not infrequently it resembles an Erb-Duchene paralysis of acute onset. Atrophy of the muscles involved, fibrillary contractions and complete reaction of degeneration occur in well marked cases. Pains, often extremely violent, may shoot through the arms. They may be of a strangely intermittent character. In one case which I observed, the patient would be wild with pain at one time and a few hours later state that she was perfectly comfortable except for her dread of the return of the terrific pains. The paralysis, too, may be intermittent. In the case of the patient just mentioned, one of her nurses thought she was malingering because at one moment she would say she could not use her arms, and a short time afterward would move them freely. In the worse cases the paralysis is more constant and clears up more gradually. Objective sensory changes may occur also, chiefly small areas of anesthesia.

2. *Mononeuritic Type.* In this form a single nerve is affected, the circumflex being especially liable with the usual symptoms of circumflex neuritis. Sciatica, paralysis of the abductors of the larynx (unilateral or bilateral), paralysis of the palatal muscles and nerve deafness have also been reported.

3. *Polyneuritic Type.* Here there is a widespread involvement of the nerves, giving rise to extensive syndromes such as flaccid quadriplegia, etc.

The *central* cases exhibit a great variety of symptoms, as might be expected. Aphasias, convulsive attacks, cord paraplegias, meningism,

choked disc, psychotic phenomena, etc., have been noted. Rolleston notes that 15.5 per cent of patients with serum sickness following intrathecal injection of antimeningococcic serum show a recrudescence of meningeal symptoms without the reappearance of organisms in the spinal fluid. Moricheau-Beauchant and Fagart have described a fatal case with central nervous phenomena, death occurring 16 days after a prophylactic dose of antitetanic serum. Pagniez and Lérond cite the case of a man with carcinoma of the mediastinum in whom serum sickness produced Jacksonian fits pointing to metastatic growths in the brain which had been completely silent previously. A few cases resembling ascending myelitis have been reported as following serum injections. While some of these may have been infections, Lérond has reported an especially interesting case of an ascending paralysis reaching the face which came on after the injection of antitetanic serum, and which, after reaching its maximum, showed a rapid improvement in the extremities with much slower recovery in the face.

The neurologic phenomena, peripheral or central, usually are preceded by ordinary serum sickness (urticaria, arthralgia, etc.) or appear during the course of these phenomena. However, they have been observed in the absence of the more usual syndrome.

Diagnosis

The acute onset after the injection of some serum or vaccine is highly suggestive and should put the observer on his guard against diagnosing such conditions as progressive muscular atrophy, amyotrophic lateral sclerosis, etc. If the injection of serum be prophylactic, and the disease against which protection is sought does not develop, the diagnosis should be easy. The real difficulty lies in distinguishing neurologic phenomena which may result from the diseases themselves. At times the distinction may be well-nigh impossible, as, e.g., in meningitis treated with serum when organisms persist in the spinal fluid. Roger, Mattei and Paillas, after studying nine cases which they attribute to diphtheria antitoxin, offer certain differential criteria in the presence of diphtheria as follows: diphtheric paralysis is not uncommon and occurs relatively late; it is almost always preceded by velopalatine paralyses and trouble with accommodation, and often is widespread and worse in the lower extremities. It is, moreover, constant until recovery occurs. Serum paralysis is rare in diphtheria, it comes on early (a week or two after injection), involvement of the palate and muscles of accommodation is rare, and often it is confined to the brachial plexus on both sides. They note the medicolegal importance of the distinction, but admit that in borderline cases it may be impossible to make. With regard to a similar differentiation in tetanus, Muller and Quénée state that the study of the electrical reactions in the muscles involved is the key to the problem. If electrical hypoexcitability be present, the paralysis is due to the

serum; if hyperexcitability, it is due to the tetanus. At times a therapeutic test may be decisive, as in a case I reported in 1926. The patient had erysipelas complicated by acute suppurative otitis media. She had been treated with antistreptococcic serum and developed symptoms strongly suggesting brain abscess, soon followed by urticaria. A dose of epinephrine resulted in the speedy disappearance of the "abscess" symptoms.

Prognosis

Recovery may be very slow, but is almost sure in the peripheral types, and even in the central types, in which practically all of the few fatalities have occurred, the outlook is better than the gravity of the symptoms might suggest. Permanent residual paralysis is exceedingly rare, and when it occurs, very slight. Complete recovery may be expected in from one to eighteen months, usually in from two to four months.

Prophylaxis

It seems probable that the very recently developed "superconcentrated" sera will tend to diminish untoward reactions of all types. Preliminary sensitization tests, which naturally should be made to lessen the risk of anaphylactic shock, are of practically no value in determining those cases which will develop neurologic symptoms. On theoretical grounds a high calcium intake for a few weeks after injection might be useful. Kennedy suggests giving sodium carbonate intravenously before injecting any serum, but I have never employed this method.

Treatment

In the severe central types with symptoms presumably due to cerebral edema, the intravenous injection of magnesium sulfate has proved of value in my experience. Hypertonic glucose may be used also. In the peripheral types measures to relieve pain usually are imperative. Morphine is contraindicated for any length of time because of the risk of addiction. Large doses of codeine, however, are much freer from this danger and may be used. Ephedrine combined with one of the barbiturates, such as amytal, is worthy of trial. Calcium therapy with vitamin D added to facilitate the utilization of the calcium may be given. Whether heat by producing congestion tends to increase the development of edematous areas or not may be an interesting theoretical question, but practically it often gives great relief, especially as radiant heat or diathermy. The former may be accompanied by gentle stroking massage, but heavy massage is contraindicated until convalescence is well established. It is wise to tell the patient early that recovery will be slow, but may be expected confidently. This enables him to become reconciled to his situation and relieves him of the mental conflicts that may arise if he feels that his case may not be properly understood and that he is not making satisfactory progress.

Bibliography

Allen, I. M.: Neurological complications of serum treatment, with report of case. Lancet 1931, II, 1128.

Berghausen, O. A.: Antitetanic serum followed by serous meningitis, Jour. Am. Med. Assoc., 1919, LXXIII, 1841.

Braunlich, G.: Anaphylaxis following the injection of 1,500 units of tetanus antitoxin, Jour. Iowa Med. Soc., 1927, XVII, 450 (quoted by Wilson and Hadden).

Coyon, R., and DeBray, J.: Polynévrite consécutice à une dysentérie bacillaire á Shiga, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1922, XLVI, 129.

Crouzon, O., and Delafontaine, P.: Un cas de névrite sérique, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1926, L, 1049.

Cutter, R. D.: Auditory nerve involvement after antitoxin, first reported case, Jour. Am. Med. Assoc., 1936, CVI, 1006.

DeChaume, J., and Croizat, P.: Lésions nerveuses dans l'anaphylaxie chronique expérimentale, Compt. rend. Soc. de Biol., 1929, CI, 1145.

Demme, H.: Obere Plexuslähmung nach vorbeugender Serumeinspritzung, Münch. med. Wchnschr., 1933, CLII, 40.

Englemann, M.: Zur Serumtherapie des Tetanus, Münch. med. Wchnschr., 1897, XLIV, 880, 915, 938.

Gangolphe: Névrite au cours d'un cas de tanos traité par la sérum thérapie, Lyon méd., 1908, CX, 497 (quoted by Allen).

Gautier, C., and Seidmann, P.: Paralysie sérique à forme de radiculoymelite, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1935, LI, 1131.

Gordon, A.: Motor paralysis of individual nerve trunks following administration of prophylactic serum, Med. Jour. and Rec., 1928, CXXVI, 530.

Grünburger, V.: Ein Fall von Tetanus traumaticus mit Ausgang in Heilung unter Antitoxin- und Blaulichtbehandlung, Prag. med. Wchnschr., 1905, XXX, 243 (quoted by Allen).

Hahn, E.: Lähmungen nach wiederholter Seruminjektion, Klin. Wchnschr., 1934, XIII, 1309.

Katz, G.: Anaphylaktische Polyneuritis nach Tetanusschutzserumimpfung, Deutsch. med. Wchnschr., 1937, LIII, 1637.

Kennedy, F.: Nervous complications following use of therapeutic and prophylactic sera, Am. Jour. Med. Sci., 1929, CLXXVII, 555.

Kraus, W. M., and Chaney, L.B.: Serum disease of the nervous system, Arch. Neurol. and Psychiat., 1937, XXXVII, 1035.

Léchelle, P., Thévenard, A., and Lacan, S.: Un cas de névrite consécutive a une injection de sérum antitétanique (1), Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1926, L, 1277.

Lérond, J.: Syndrome de paralysie ascendante atteignant la face, aprés l'injection de sérum antitétanique. Regression rapide au niveau des membres, lente à face, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1926, L, 1695.

Mignon, R.: Paralysie du plexus brachial après sérothérapique antidiphtérique, Presse méd., 1936, XLIV, 883.

Moricheau-Beauchant, R.: Les paralysies post-sérothérapiques, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1923, XLVII, 1357.

Moricheau-Beauchant, R. and Fagart: Injection préventive de sérum antitétanique. Accidents paralytiques consécutifs. Mort seize jours après l'injection, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1924, XLVIII, 1406.

Muller and Quénée, A.: Les séquelles tétaniques. Séquelles d'origine purement sérique, Paris Méd., 1932, LXXXVI, 100. Séquelles mixtes et toxiniennes. Responsibilité de chacun de ces facteurs, Paris Méd., 1932, LXXXVI, 225.

Noel, R., Pommé, B.: and Buffé, P.: La zone de jonction myo-neuralé dans troies cas de paralysie post-sérothérapique. Comparaison des constatations histopathologiques et des examens électriques, Compt. rend. Soc. de Biol., 1932, CX, 322.

Petit, C.: Les névrites postsérotherapiques. Thèse de Nancy, 1925 (quoted by Young).

Roger, H., Mattei, C., and Paillas, J.: Les paralysies du plexus brachial après sérotherapique antidiphtérique, Ann. de Méd., 1931, XXIX, 610.

Sainton, Descouts, P., and LeClerc, R.: Parésie dissociée des membres supérieurs consécutive à la sérotherapie antitétanique préventive. Contractions fibrillaires. Importance de l'etude de réactions électriques pour la diagnostic des syndromes frustes, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1924, XLVIII, 155.

Sézary and Dessaint: Névrite postsérotherapique, Bull. et Mém. Soc. méd. d. Hôp, de Paris, 1923, XLVII, 1375.

Sicard and Canteloube: Paralysie radiale post-sérothérapique, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1923, XLVII, 1375.

Sicard, deGemmes and Coste: Paralysis post-sérothérapique tétanique, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1924, XLVIII, 1400.

Souques, LaFourcade and Terris: Polynévrite consécutive à une injection préventive de sérum antitétanique, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1924, XLVIII, 757. Un nouveau cas de polynévrite consécutive à une injection de sérum antitétanique, Bull. et Mém. Soc. d. Hôp. de Paris, 1924, XLVIII, 1676.

Taylor, F. R.: A problem in diagnosis, South. Med. and Surg., 1926, LXXXVIII, 825.

Thaon, P.: Semaine méd., 1910, XXX, 513 (quoted by Allen).

Tzanck, A. and Abadi: Un cas de psychose sérique. Des manifestations psychiques de l'intolerance, Bull. et Mém. Soc. méd. d. Hôp. de Paris, 1934, L, 1147.

Wilson, G. and Hadden, S. B.: Neuritis and multiple neuritis following serum therapy, Jour. Am. Med. Assoc., 1932, XCVIII, 123.

Young, F.: Peripheral nerve paralyses following use of various serums; report of case and review of literature, Jour. Am. Med. Assoc., 1932, XCVIII, 1139.

Dr. Barnes Woodhall (Durham): Mr. Chairman, I do not think usually it is a good thing for a brain surgeon to discuss a purely neurological problem, but unfortunately my colleague could not be here and I have been asked to take his place.

I feel that Dr. Taylor should be highly commended for his scholastic presentation of this rare and obscure but important neurological disturbance. Certainly, he has left me very little to discuss.

I think Dr. Foster Kennedy says also that there are some neurological diagnoses that anyone can make and there are some that no one can make. I am sure I have seen cases such as Dr. Taylor has described which have fallen not only into this latter category but have also been called something else.

I think it is important to realize that these disturbances can follow all kinds of serum. I think that the reason they follow antitetanic serum more frequently is because we use that serum more frequently.

A disturbance in the blood vessel wall which results in the nervous system not functioning properly may be due to accidents involving pressure and also to lack of nutrition in the central nervous system.

In the differential diagnosis by far the most important point is the differentiation between serum sickness and injuries to the spine followed by nervous system damage. The pain in serum disturbances comes on late—four or five days after the administration of serum. Differentiation of cerebral types is fairly easy because of the fact one hasn't the faintest idea what is going on in the brain.

I agree with Dr. Taylor that these rather rare disturbances should not contra-indicate their severity. Thank you very much, Doctor. (Applause.)

Dr. F. R. Taylor (High Point): Mr. Chairman, I have nothing at present to say in closing except to express my deep appreciation for Dr. Woodhall's coming in to discuss this paper. I certainly appreciate Dr. Woodhall's coming here and his very able discussion.

There is just one thing that occurs to me. It has nothing particularly to do with this paper, and yet in another way, perhaps, it has. Dr. Donnelly gave us a marvelous address and spoke of how the practitioner must engage in clinical investigation. There is one little thing with regard to statistical investigation that takes very little time and very little trouble and that is a mighty help to clinical research; that is a diagnostic cross reference index. Anyone can keep it. It is simply a card index and at the head of each card is the name of a disease and under that disease is the name of every patient who has been diagnosed as having that disease. That will automatically give you the number of cases of that disease that you have a record of and you can turn to all the cases of that disease that you have records of and draw whatever conclusions may be justified from your own personal experience. It is very simple. When you have your case record in the office, simply

don't file the case record until you also note down on the diagnostic cross reference index the name of that patient. Thank you very much.

Dr. Taylor resumed the Chair.

The nominating committee reported that Dr. J. W. Vernon, of Morganton, had been nominated. Dr. Vernon declined the nomination. A motion was made and carried to refer the nomination back to the committee. The committee then reported the nomination of Dr. P. A. Yoder, of Winston-Salem. The nomination was seconded, voted upon, and Dr. P. A. Yoder was elected Chairman of the Section for the next year.

The Section adjourned at 5:15 p.m.

SECTION ON SURGERY

WEDNESDAY AFTERNOON

May 4, 1938

The Section on Surgery of the Medical Society of the State of North Carolina convened at 2 p.m., in the Men's Card Room, The Carolina, Pinehurst, Dr. Julian A. Moore presiding as Chairman.

Chairman Moore: There are two committees to be appointed, and I think I shall appoint one of them first. This is the committee whose function it is to listen to these papers and pick out the best paper in this section which they will turn over to the committee for the whole society. I am going to appoint on that committee Dr. John Kennedy as chairman, Dr. Robert A. Ross, and Dr. James Gibbon. We can appoint the second committee later, which is the Nominating Committee.

The first paper on our scientific session this afternoon is by Dr. Clarence E. Gardner, Jr., of Durham, on "Delayed Operation in the Treatment of the Perforated Appendix." (Applause.)

Dr. Gardner presented his prepared paper. (Applause.)

DELAYED OPERATION IN THE TREATMENT OF THE PERFORATED APPENDIX

Clarence E. Gardner, Jr.
Durham, N. C.

Delay in operation upon a purely surgical intra-abdominal condition does not appeal, at first sight, to surgical instincts. Such practice in the care of the perforated appendix has never become universally popular in the 46 years since it was first advocated by A. J. Ochsner[1] and at present it continues to represent one of the most controversial questions of surgical practice.[2]

We were trained in the belief that the only treatment for the per-

forated appendix was immediate operation, and such was our practice when the Duke Hospital opened in July 1930. It soon became evident, however, that in some cases immediate operation did more harm than good. Convinced that the principles of delayed operation were surgically and physiologically sound, and encouraged by the statistics of those who had used this form of treatment, we gradually came to adopt the plan of delayed operation in all cases in whom a definite preoperative diagnosis of perforated appendicitis could be made. This study records our experience with 248 cases of appendicitis with perforation admitted to the surgical service of the Duke Hospital from July 1930 to July 1937.

The rationale of delaying operation in cases of appendiceal peritonitis is based upon the fact that a natural protecting mechanism exists within the abdomen which, if left undisturbed, is usually capable of causing the resolution or localization of appendiceal peritonitis. This protective mechanism consists of the inflammatory response to the presence of irritation within the peritoneum, and is characterized by the outpouring of an exudate which is bactericidal, and contains leucocytes and fibrin. The fibrin agglutinates peritoneal surfaces of bowel, omentum, and abdominal wall in an effort to wall off areas of inflammation from uncontaminated parts of the peritoneal cavity. This being possible, the bactericidal effect of the inflammatory reaction is sufficient to cause complete resolution of the infection in the majority of properly managed cases. Such a protective mechanism is effective only if left undisturbed; disturbing elements being any factor such as food or cathartics which stimulate peristaltic activity in the bowel, or any mechanical procedure such as operation, either of which may break up the protective barrier of agglutinated peritoneal surfaces, and open the uncontaminated peritoneum to infection.

This concept was first applied by Ochsner in the preoperative treatment of diffuse appendiceal peritonitis. In this condition he advocated complete rest of the bowel by withholding everything by mouth, gastric lavage if the stomach and intestinal tract were not empty, and the administration of parenteral fluids until the peritonitis had localized or subsided when operation could be done safely. In his hands, in those of Deaver[3], who soon became a staunch advocate of this plan of treatment, and more recently in the hands of Guerry[4] striking reductions in the mortality of diffuse peritonitis of appendiceal origin were demonstrated.

Nevertheless, although almost half a century has elapsed since it was first advocated, delayed operation has never been adopted by the majority of surgeons. Why has it not been accepted more uniformly? Royster[5] says that "the Ochsner treatment has been woefully misunderstood" and "Dissatisfaction with its results or fatal consequences following its use have come about either through inability to comprehend its principles

or to careless execution in its technique." Such misunderstanding may be caused by the fact that Ochsner's descriptions of his plan are not easily accessible, and that his followers in this country have not described their technique in detail. Moreover, set rules governing the operation of the plan are difficult to outline, for its successful operation requires judgment which is intangible, and does not easily lend itself to a list of didactic rules which may be easily followed. Probably a more important cause for the lack of popularity of the treatment is the fact that it is more difficult to manage than immediate operation. It necessitates care in selecting cases, close supervision during the course of treatment, and keen judgment in determining when operation should be done once the treatment is started. It requires the sympathetic understanding of the family who usually feel that their procrastination in bringing the patient late may be compensated for by immediate operation, and of the family doctor who may not understand the treatment. And, in addition, it requires the coöperation of the patient who, in the face of continued improvement in his condition, must take nothing by mouth for a longer period of time than he finds comfortable. Such difficulties, we believe, however, are far outweighed by the shorter period of hospitalization, decrease in incidence of complications and lowered death rate which accompanies this form of treatment.

SELECTION OF CASES

Stage of Disease. There should be no misunderstanding that delayed operation is reserved only for patients with perforated appendices. Whether or not the appendix has perforated in any given case must be determined individually for each patient after a careful analysis of history, and physical and laboratory findings. No definite hour after onset of symptoms can be used as a criterion of perforation. While it is true that in most severe attacks of appendicitis the appendix is found to be ruptured 48 hours or longer after an attack, it is not wise to set an arbitrary hour, such as 48 hours after onset, as a dividing line to separate cases requiring immediate or delayed operation. We have seen one patient in whom delayed operation was justified in the first day of the illness, and have seen many in whom immediate operation was indicated four or five days after onset of symptoms. It must be emphasized that if, after careful evaluation of all diagnostic measures, there exists a reasonable question as to whether the appendix is or is not ruptured, immediate operation must be done. We have followed this rule rigidly, and have found that in our group of 171 cases with perforated appendices in whom immediate operation was done, 96 or 56 per cent were in patients with symptoms of 48 hours' duration or less. (Table II.)

Differences of opinion exist as to which forms of appendiceal peritonitis should be treated conservatively. Ochsner first advocated his treatment in cases of spreading or diffuse peritonitis. In England, where

Sherren[6] first advocated delayed operation in 1905, it has been used largely in cases where localization has already occurred, while patients with diffuse peritonitis, unless moribund, are usually submitted to immediate operation. British surgeons also frequently treat inflammatory masses conservatively for a long period of time. In the United States conservative treatment has been reserved largely for patients with diffuse or spreading peritonitis, and when inflammatory masses have appeared, early operation has usually been advocated. We have combined these two applications of the conservative regime and now treat all patients with ruptured appendices conservatively, with the exceptions as listed below, regardless of the stage of the peritoneal infection in which the patient is first seen. Our experience (Table I) has been largest in patients with inflammatory masses present on admission. Only two patients with diffuse peritonitis have been treated conservatively. In one the infection localized satisfactorily, and was drained. The other patient entered the hospital in the 25th hour of her illness with signs of generalized peritonitis, maximum in the pelvis, thought to be coming from a salpingitis. Placed on the conservative regime she seemed to improve, although her temperature and pulse did not fall, and she died on the fifth day of generalized peritonitis. This case, early in our experience, corroborates the observations of Alton Ochsner[7], and has convinced us that expectant treatment is unwise in the presence of early perforation of the appendix, and widespread signs of peritonitis. Such a situation, we now feel, represents the only major contraindication to the use of delayed operation.

Age of Patient: A. J. Ochsner recognized early in his experience that delayed operation was not borne well by the very young or the very old. Aged patients, he emphasized, do not stand confinement to bed well, while in small children the omentum is not sufficiently developed to act as a protection. This opinion has been modified by Alton Ochsner[7] who recommends the conservative regime in children in whom localization of the peritoneal infection is beginning. And more recently it has been reversed by the experience of Coller and Potter[8] at the University of Michigan, and Adams and Bancroft[9] at the University of Minnesota, who have found the use of delayed operation advisable in children with diffuse as well as localized appendiceal peritonitis.

Coller and Potter[8] in 1934 reported a series of 48 children with diffuse peritonitis treated conservatively with a mortality of 12.5 per cent. Although recognizing that the delayed form of operative treatment is less efficient in children than in adults, as is any form of treatment in this age group, their results using delayed operation were superior to immediate operation, and they recommend the use of the conservative regime in all patients with diffuse peritonitis, regardless of age. Adams and Bancroft[9] in 1937 reported 110 children with appendiceal peritonitis treated conservatively. Sixty-seven of these patients had generalized

peritonitis. Sixty-one per cent developed inflammatory masses, only 10 per cent of which formed abscesses which had to be drained. Ninety-five of the remaining cases subsided completely, and were discharged to return for interval appendectomy in eight weeks. The mortality in this series of 110 cases was 4.5 per cent.

Our practice has been to treat children with appendiceal peritonitis conservatively only when localization is already beginning, and to use immediate operation for children with diffuse peritonitis. We have used the conservative treatment in fifteen children. (Table III) In eleven of these, symptoms and signs subsided entirely, and the patients left the hospital without operation, to return in three months for interval appendectomy. The remaining four failed to improve and were operated upon on an average of eight days after admission. One died of a subphrenic abscess which ruptured through the diaphragm. All the others recovered.

In children with diffuse peritonitis, it has been our practice to use immediate operation. Jones and Menefee[10] in an analysis of all cases of appendicitis in our children's ward between 1930 and 1935 found our mortality in twelve children with generalized peritonitis, all treated by immediate operation, to be 42 per cent. In the past three years eleven children with generalized peritonitis have been treated, ten by immediate operation and one by delayed operation. Five of those subjected to immediate operation died. We are not satisfied with this result which contributes largely to our mortality of 42.8 per cent in all cases of diffuse peritonitis treated in the past three years (Table IV). And in the future we intend to follow the practice of Coller and Potter and Adams and Bancroft, and treat children with generalized appendiceal peritonitis conservatively the same as adults.

Previous Catharsis: The recent ingestion of cathartics has been stated by Bailey[11] to be a justifiable reason for not using the delayed treatment. It is our feeling that such catharsis represents a hazard equally as dangerous as if immediate operation were undertaken, and we have rarely been influenced by a history of catharsis during the attack. Of our seventy-seven cases treated conservatively thirty-seven had had catharsis.

Questions of Diagnosis. When a definite differential diagnosis between perforated appendicitis, and some other intra-abdominal catastrophe which requires immediate operation cannot be made, immediate operation should be done. If, on the other hand, the alternative condition suspected does not require immediate operation indication for delayed operation is all the more certain.

Pregnancy. Coller and Potter[8] urge that the delayed form of treatment never be used in pregnant women, stating that the presence of the enlarged uterus prevents localization of the infection. Bailey[11], on the other hand, states that the presence of a pregnancy should not influence

one in the selection of suitable cases for delayed operation. We have had no experience with this condition.

Facilities for Care. It must be emphasized that the conservative treatment of appendiceal peritonitis is not a substitute for operation, but a preparation for it. It is not to be undertaken in the home or by the family doctor but in a hospital, "on the threshold of the operating room"[11] under the constant eye of the surgeon who is to operate at any hour if necessary. Adequate care can be given satisfactorily in any modern hospital with a trained nursing staff. However, if the surgeon is not so situated that he can visit his patients personally at least three times daily, and be prepared to respond at any hour if called, the delayed form of treatment should not be undertaken.

Management of Conservative Treatment

Once a patient is selected for the delayed operative treatment, the following regime is outlined.

Fowler's position. The patient is kept in bed in Fowler's position with the head of the bed elevated on six-inch blocks.

Nothing by mouth. Although Sherren[6] and his followers in England allow water by mouth, we are convinced of the wisdom of Ochsner's original plan and give absolutely nothing by mouth during the early days of the treatment.

Parenteral Fuids. A fluid intake of 2,000 to 4,000 cc. is maintained daily by divided intravenous injections, subcutaneous infusion or continuous intravenous infusions. Fluids are not administered by rectum nor are large enemas given. Care must be taken that the electrolytes of the blood are not depleted, particularly if constant syphonage of the stomach is maintained.

Gastric Lavage. If the patient has been vomiting, has eaten recently, or if he is distended, the stomach is washed. If duodenal content is recovered, continuous syphon drainage of the stomach is maintained using the method of Wangensteen until such drainage stops.

Sedation. It has been our experience that opiates are seldom necessary. The occurrence of pain during treatment usually indicates that an abscess should be drained, or that the intestinal tract is over-loaded, and stomach syphonage is necessary. Opiates are used only to allay restlessness or apprehension. We have not used large does of morphine to increase intestinal tone.

Special Observation. As soon as the patient is admitted the extent of abdominal signs is carefully recorded on his chart. If he enters with a palpable inflammatory mass, its exact size is drawn on the abdominal wall with gentian violet. In addition, a special bedside nursing chart is kept on which the nurses record the rectal temperature every two hours, the pulse every hour, and the occurrence of vomiting, and pain, as well

as the fluid intake, nature and amount of stomach drainage, if any, the urinary output, and the passage of flatus or feces.

Clinical Course Under Conservative Treatment

There are several possible courses which may be followed by the peritoneal infection under conservative treatment (Fig. 1). They are:

1. The entire inflammatory process may disappear by resolution. This occurred in sixty or seventy-eight per cent of our seventy-seven cases treated conservatively.

2. The inflammatory process may become localized in the right iliac fossa or in the pelvis, forming a palpable inflammatory mass. Such a mass (a) may then resolve, (b) may fail to resolve or actually increase in size and necessitate drainage, or (c) may rupture into the peritoneal cavity, the bowel or the retroperitoneal tissues.

3. The inflammatory process may continue to spread, and the patient succumb to a generalized peritonitis.

One must be on the alert for the development of any of these possibilities, and if indication of continued spread of the peritoneal infection or of increase in size or rupture of an abscess occurs, immediate operation must be done.

Resolution of the Peritoneal Infection. In the majority of patients under the conservative regime of treatment, resolution of the peritoneal infection occurs, and improvement in the general condition is observed from the start. Vomiting and pain stop, dehydration is overcome, abdominal distention is lessened, tenderness and rigidity of the abdominal muscles decrease, and the temperature and pulse gradually fall.

The continuation of abdominal pain as is contrasted to abdominal soreness usually indicates that the appendix is not ruptured or that an abscess under tension is present.

With the complete rest given the gastro-intestinal tract, and with the use of the indwelling nasal catheter in the stomach, when indicated, abdominal distention has never been a troublesome condition.

The temperature usually subsides slowly, and in our experience approximated normal in an average of seven days (Chart 1). Maintenance of an elevated temperature in itself for a few days need not be considered abnormal.

The pulse usually falls before the temperature (Chart 1). A rising pulse is one of the most important single signs of trouble, and usually indicates that the delayed treatment should be abandoned.

If the clinical course progresses satisfactorily the patient is kept on nothing by mouth until the temperature approximates normal, all distention has disappeared, and he is free of discomfort. Water in amounts of 30 cc. hourly is then started. If this is not accompanied by

abdominal discomfort or rise in temperature, broth, ginger ale, and orange albumen is given in amounts not exceeding 30 cc. per hour on the following day. This is then increased to 60 cc. on the next day, clear liquids as desired the next day, and soft diet thereafter during the hospital stay. As feedings are started, the nursing chart, symptoms and abdominal signs must be watched closely for evidence of a flare up in the inflammatory process. If at any time abdominal discomfort, increase in abdominal signs or recurrence of tachycardia or fever appears, all fluid intake by mouth must be stopped. If signs do not then subside promptly, operation must be done. If it is necessary to keep a patient on nothing by mouth for longer than four or five days, as is often the case, transfusions of 500 cc. of citrated blood are given at one- or two-day intervals. None of our patients undergoing conservative treatment have developed nutritional œdema, although we have occasionally seen this in postoperative patients with peritonitis, in whom feeding by mouth has been withheld for a long period of time.

Abscess Formation. The patient may enter the hospital with a palpable inflammatory mass or one may develop while under treatment. It is surprising how often large inflammatory masses will disappear completely under the conservative regime of treatment. Such was the case in fifty-three, or 78 per cent of the sixty-eight cases who either entered with or developed inflammatory masses while under conservative treatment. In 367 cases of appendiceal peritonitis with inflammatory mass treated expectantly, Sworn and Fitzgibbon[12] report 298, or 81 per cent, to have subsided, thirteen by evacuation into the bowel. Love[13] reports 68 per cent of 341 cases, and Adams[14] 67 per cent of 214 cases as subsiding completely under the conservative regime.

About twenty per cent of inflammatory masses will not subside, and will form abscesses which must be drained. That such an abscess may rupture into the peritoneal cavity must be remembered by all who practice delayed operation. In our series of sixty-eight patients with inflammatory masses on admission, or who developed them while under the course of treatment, thirteen or 17 per cent did not subside, and were drained at operation, the appendix not being removed in any of these cases. None in our exprience have had an abscess rupture into the peritoneal cavity or into the bowel. One patient admitted one month after onset of symptoms died thirty-six hours after admission with a large retroperitoneal abscess.

Close observation of patients with inflammatory masses undergoing the treatment must be maintained so that those with abscesses which need drainage or which might rupture may be selected for operation. Careful evaluation of the temperature, pulse, abdominal symptoms and size of the abdominal mass must be made frequently. The size of the mass is mapped on the abdominal wall daily and bimanual examination

of the pelvis made every two days. The following are taken as indications for operation: (1) The mass is not decreasing in size after four or five days' treatment; (2) The temperature is not subsiding after a week; (3) The mass is growing larger (this is indication for immediate operation); or (4) Pain, as contrasted to abdominal soreness, appears. Because of the difficulty in estimating the size of pelvic abscesses Bailey does not treat abscess in this position expectantly. We feel that bimanual examination of the pelvis can give reliable evidence of the size of pelvic abscesses, and have not hesitated to treat abscesses in this position by delayed operation. Coller and Potter draw attention to œdema of the genitalia as a sign of large intra-abdominal abscesses under tension which require immediate operation. They also feel that a return of elevation in leucocyte count after a preliminary fall during treatment indicates the presence of an abscess.

None of our patients have had an abscess rupture into the peritoneal cavity while under conservative treatment, although Bailey[11] reports such a catastrophe. His patient, age 11, seemed to be progressing satisfactorily although the abscess was not decreasing in size. On the fifth day he suddenly collapsed, and showed signs of general peritonitis. Immediate operation was done, drainage was instituted locally, and suprapubically, and the patient recovered. Jopson and Pfeiffer[15] report three patients with perforation of an appendix abscess into the free peritoneal cavity, although none occurred in patients hospitalized under the conservative regime. All had had sudden exacerbations of their abdominal symptoms with evidence of a violent peritonitis. Two had also shown evidence of circulatory collapse at the time of the rupture. Operation was done in one case two days after rupture, in another after twelve hours, and in the third in four or five hours. Only the last patient survived. They emphasize that when an abscess perforates into the free peritoneal cavity immediate operation is imperative.

Continued Spread of the Peritoneal Infection. The process of inflammation within the abdomen may fail to limit spread of infection from a perforated appendix. However, in only one of our seventy-seven cases treated expectantly did the infection fail to localize or subside, and this patient, we now recognize, was improperly selected for delayed operative treatment.

If from the onset of treatment abdominal signs do not recede, pain subside, and the pulse rate fall, one should be hesitant to continue the conservative regime. If the abdominal signs are found to be spreading, the pain increasing, or the pulse rising, immediate operation becomes necessary. Bailey draws particular attention to a rising pulse as an indication that the conservative treatment must be abandoned. One need not be alarmed at a maintained temperature for a few days.

When to Operate

The proper time to operate is as important in the successful conclusion of the conservative treatment as is the selection of cases or the management of the regime.

As already indicated, if a localized inflammatory mass is not subsiding or is increasing in size, if an abscess ruptures into the peritoneal cavity, or if continued spread of the peritoneal infection occurs, immediate operation should be done. Fortunately, except in the case of a small percentage of inflammatory masses which do not subside, it is unusual for appendiceal peritonitis not to resolve spontaneously under a properly managed regime of treatment as outlined. When then should operation be done in the case where the infection is subsiding satisfactorily? Some delay operation only until the peritonitis shows evidence of localizing, others operate as soon as the acute inflammation has subsided which is usually after eight to ten days of the treatment; while still others wait two or three months after the attack before removing the appendix in an interval stage. We follow the latter form of treatment. Operation in the presence of recent peritoneal infection is too often complicated by the presence of free pus, or by such a mass of adhesions as to make the procedure extremely difficult and hazardous. On the other hand, we have never failed to express surprise at the relative absence of adhesions, and the ease of the operative procedure when the appendix is removed three months after the attack.

Results of Delayed Operation

Mortality. It is the experience of all who have used the delayed form of operative treatment in appendiceal peritonitis, as outlined, that the mortality rate is significantly reduced. Our seven-year experience with perforated appendices is divided into two periods (Table IV). From 1930-34 delayed operation was not used in the early years, and in the latter ones only occasionally. This series numbered 122 patients. In the period 1934-37, which includes 126 cases, delayed operation was used in all patients when indicated. The mortality rate in the latter period, 8.7 per cent, was less than half that of the 18 per cent of the first period. This reduction was accomplished mainly in the groups of local peritonitis and abscess where the mortality fell from 10 per cent to 5 per cent and 14.3 per cent to 4.2 per cent respectively.

Guerry[4] in 1936 reported an operative mortality of 1.4 per cent in 139 cases of diffuse peritonitis treated by delayed operation in contrast to a mortality of 10.6 per cent in ninety-four similar cases treated by immediate operation. Deaver and Magoun[3] report a mortality of 10.5 per cent for all cases with acute appendicitis treated between 1901 and 1905. In the period 1910 to 1914 this fell to 3.7 per cent, and between 1915 and 1919 to 4.2 per cent, a reduction which they attributed to the

delayed form of operative treatment used in the latter periods. Coller and Potter[8] report a mortality of 9.4 per cent in eighty-seven cases of spreading peritonitis occurring in patients of all age groups treated by delayed operation. Adams and Bancroft[9] in a series of 110 children, sixty-seven of which had generalized peritonitis, report a mortality of 4.5 per cent using the conservative regime of treatment. Stanton[16] reports 113 cases with well-marked evidences of peritonitis. In thirty-one with immediate operation the mortality was 42 per cent, while eighty-two were treated by delayed operation with a mortality of 8.5 per cent. Bunch and Doughty[17] in a series of 512 cases of perforated appendicitis treated conservatively when indicated report a mortality of 9.5 per cent. In similar studies, Kirtley and Daniel[18] in a series of 308 cases report a mortality of 16.2 per cent, and Sperling and Myrick[19] a mortality of 16 per cent in 175 cases.

Sworn and Fitzgibbon[12] report 487 cases of perforated appendices with palpable mass. One hundred twenty were operated upon immediately and sixty-nine after a preliminary delay with a mortality of 7.9 per cent. In 298 conservative treatment was used and no operation done at the time with a mortality of 0.68 per cent. Love[13] reports 341 cases of local peritonitis and abscess treated conservatively with a mortality of 3.5 per cent. Immediate operation was done in 1,044 cases of all forms of appendiceal peritonitis with a mortality of 8.8 per cent. Adams[14] in a similar series reports a mortality of 4.2 per cent in 214 cases treated conservatively, and 13.2 per cent in 553 cases treated by immediate operation. Bailey[11] in 242 cases of all forms of acute appendicitis treated by immediate operation had a mortality of 1.6 per cent. Of seventy-three cases with appendiceal peritonitis treated conservatively, the mortality was 1.3 per cent.

Complications. In our series of sixty cases in whom complete resolution of the peritoneal infection occurred without operation, complications developed in three, or 5 per cent, of cases (Table V). In the series of 145 who survived immediate operation, complications were present in twenty-nine, or 20 per cent (Table VII). Sworn and Fitzgibbon[12] report 17.1 per cent complications in their group of appendix abscess cases with operation and 6.7 per cent with conservative treatment.

None of our cases have developed subphrenic abscess or pylephlebitis while under the conservative treatment. Bailey states that subphrenic abscess is almost unknown, and that pylephlebitis does not occur under delayed operative treatment.

Duration of Hospitalization. That the period of hospitalization is not increased is indicated by the average duration of hospitalization in Tables V, VI, and VII. In patients with appendiceal peritonitis treated by immediate operation, the average hospital stay was 26.1 days. In those whose symptoms subsided completely under conservative treat-

ment, it was sixteen days. If to this is added a period of seven days, which is the average period of hospitalization for interval appendectomy, the total is twenty-three days. In the group in whom operation was unsuccessfully delayed, the total period of hospitalization was twenty-nine and seven-tenths days.

Summary and Conclusions

The delayed form of operative treatment in appendiceal peritonitis is based on sound physiological and surgical principles. It is indicated in all forms of appendiceal peritonitis regardless of age except in the presence of early perforation with widespread signs of peritonitis. Management of the treatment requires absolute rest of the intestinal tract, maintenance of an adequate fluid, mineral and caloric intake by routes other than by mouth, and careful observation for evidence of continued spread of a peritonitis or rupture of an abscess, in which case immediate operation becomes necessary.

Of seventy-seven patients with appendiceal peritonitis treated conservatively, sixty or 78 per cent subsided completely in an average of sixteen days, and were discharged to return for interval appendectomy in three months. Thirteen cases failed to subside, and formed abscesses, which had to be drained on an average of nine days after admission.

The entire series of 248 cases of appendiceal peritonitis is divided into two periods. In the first, when delayed operation was used only occasionally, the mortality in 122 patients was 18 per cent. In the second period with consistent use of delayed operation, except in children with generalized peritonitis, this fell to 8.7 per cent in a group of 126 patients. This reduction was accomplished largely in the groups with local peritonitis and abscess where the mortality rate fell from 10 per cent to 5 per cent, and from 14.3 per cent to 4.2 per cent respectively.

Failure of reduction in mortality in the group of general peritonitis cases is caused by the fact that in both periods immediate operation was used in all children with diffuse peritonitis. Application of the principle of delayed operation to children with general peritonitis the same as to adults, even though such treatment is recognized to be less efficient in children, we feel would have reduced the mortality in the diffuse peritonitis group.

The complication incidence in survivors of delayed operation was 5 per cent, and of immediate operation 20 per cent. The average period of hospitalization of survivors in the group which subsided completely under the conservative regime was sixteen days, and in the group with immediate operation twenty-six days.

The reduction in mortality, incidence of complication, and duration of hospitalization in patients with appendiceal peritonitis treated by delayed operation justifies the more widely accepted use of this form of treatment.

BIBLIOGRAPHY

[1] Ochsner, A. J.: The Cause of Diffuse Peritonitis Complicating Appendicitis and Its Prevention, Am. J. Surg & Gynec. 15: 84, 1902.
[2] Report of Meeting of the Fellowship of Medicine and Postgraduate Medical Association. Debate on Operation for Appendicitis, Lancet 1: 581, 1933.
[3] Deaver, J. B., and Magoun, J. A. H.: Review of 5,499 Appendectomies Performed at Landenau Hospital of Philadelphia, Ann. Surg. 79: 854, 1924.
[4] Guerry, LeGrand: Quoted by Bunch and Doughty.
[5] Royster, H. A.: Appendicitis. New York: D. Appleton & Co., 1927.
[6] Sherren, James: The Causation and Treatment of Appendicitis, Practitioner 74: 833, 1905. Appendicitis, Brit. M. J. 1: 726, 1925.
[7] Ochsner, Alton: Conservative Treatment of Appendiceal Peritonitis, New Orleans M. & S. J. 87: 32, 1934.
[8] Coller, Frederick A., and Potter, Eugene B.: The Treatment of Peritonitis Associated with Appendicitis, J.A.M.A. 103: 1753, 1934.
[9] Adams, John M., and Bancroft, Paul M.: The Conservative Management of Appendiceal Peritonitis in Children, J. Pediat. 12: 298, 1938.
[10] Jones, Randolph, Jr., and Menefee, Elijah E.: Acute Appendicitis in Childhood, Am. J. Surg. 37: 446, 1937.
[11] Bailey, Hamilton: The Ochsner-Sherren Treatment of Acute Appendicitis, Brit. M. J. 1; 140, 1930. Emergency Surgery, Vol. I, New York, Wm. Wood & Co., 1930.
[12] Sworn, B. R., and Fitzgibbon, G. M.: An analysis of 2,126 Cases of Acute Appendicitis, Brit. J. Surg. 19; 410, 1932.
[13] Love, R. J. McNeill: The Treatment of Acute Appendicitis, Lancet 1: 1229, 1933. Some Observations on the Prognosis of Acute Appendicitis, Brit. J. Surg. 11: 232, 1923.
[14] Adams, Joseph E.: The Mortality of Appendicitis, Brit. M. J. 1: 723, 1925.
[15] Jopson, J. H., and Pfeiffer, D. B.: The Limitations of the Ochsner Treatment in Certain Cases of Suppurative Appendicitis, Ann. Surg. 77: 194, 1923.
[16] Stanton, E. M.: Acute Appendicitis, Surg. Gynec. Obst. 59: 738, 1934.
[17] Bunch, Geo. H., and Doughty, Roger: The Treatment of Acute Appendicitis, Ann. Surg. 106: 42, 1937.
[18] Kirtley, J. A., and Daniel, R. A.: Acute Appendicitis. A Study of 1,000 Consecutive Cases, Surgery 2: 215, 1937.
[19] Sperling, L., and Myrick, J. C.: Acute Appendicitis, Surgery 1: 255, 1937.

ADDITIONAL REFERENCES

Berry, Sir James: "Fallen Idols." The Case of Appendicitis, Lancet 1: 1027, 1932.
Brown, Herbert: Discussion of Treatment of Acute Appendicitis, Proc. Roy. Soc. Med. 26: 193, 1932.
Cope, Zachary: Discussion of Treatment of Acute Appendicitis, Proc. Roy. Soc. Med. 26: 194, 1932.
Mitchiner, P. H.: When to "Wait and See" in Acute Appendicitis, Lancet 1: 363, 1933.
Rayner, H. H.: Discussion of Treatment of Acute Appendicitis, Proc. Roy. Soc. Med. 26: 185, 1932.
Wilkie, David P. D.: Appendicitis, Ann. Surg. 100: 202,1934.

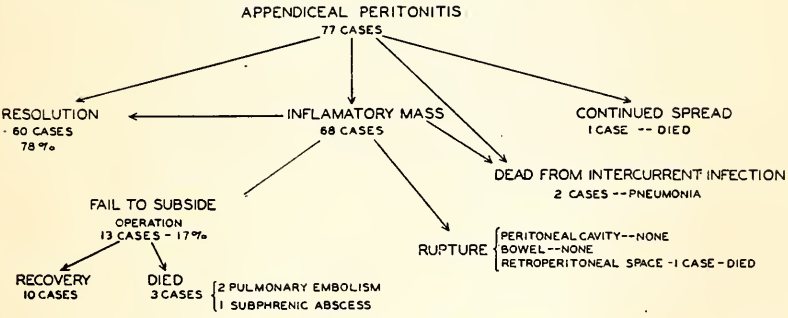


FIG. 1—Gardner: Delayed Operation.

FIG. 1. Diagram showing the course followed and the result in seventy-seven cases of appendiceal peritonitis treated conservatively. The seventy-seven cases included two with diffuse peritonitis, fifteen with local peritonitis and sixty with palpable masses. Of the sixty cases in whom signs and symptoms completely resolved and the patients were discharged to return for interval appendectomy, forty-eight entered with palpable masses and twelve with local peritonitis. Of these twelve cases with localized peritonitis, five developed palpable masses which subsided and seven subsided without first forming a mass. Of the thirteen cases which failed to subside and in whom operation became necessary, one entered with diffuse peritonitis, two with local peritonitis and ten with palpable masses.

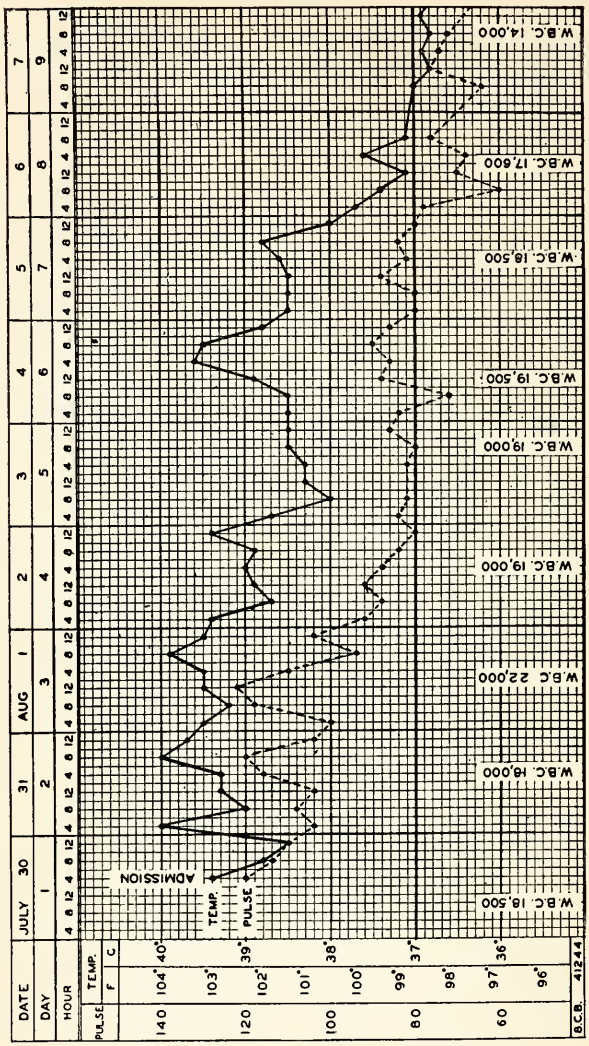


CHART 1—Gardner: Delayed Operation.

CHART 1. The temperature chart of a typical case with appendiceal peritonitis treated conservatively. The average temperature on admission of sixty cases treated conservatively in whom resolution of the infection occurred was 102° F. and the average pulse 110. The average duration of fever was seven days. The patient whose chart is shown was a boy of fourteen who entered with symptoms of three days' duration and with signs of peritonitis in both lower quadrants and in the pelvis. On the second and third day an indefinite mass was found in the right lower quadrant. It could not be felt after the fourth day. Abdominal tenderness had disappeared by the sixth day. Water was given by mouth on the sixth day and clear liquids on the seventh. He remained in the hospital fifteen days, the temperature being normal after the eighth day.

TABLE I
General Analysis of All Cases Studied

1930-1937	Immediate Operation		Delayed Operation[1]		Subsided No Operation[2]		Total	
	No. Cases	Deaths	No. Cases	Deaths	No. Cases	Deaths	No. Cases	Deaths
Acute Appendicitis	685	0	0	0	0	0	685	0
Local Peritonitis	65	5	2	0	13	1	80	6
Abscess	75	7	10	3	50	2	135	12
Diffuse Peritonitis	31	14	1	0	1	1	33	15
TOTAL	856	26	13	3	64	4	933	33

[1] The conservative treatment was abandoned after an average period of nine days because signs were not subsiding or were increasing.
[2] Symptoms and signs subsided completely or the patient died under conservative treatment without operation. Surviving patients discharged after an average hospitalization of 16 days to return for appendectomy in three months.

TABLE II
Duration of Symptoms According to Treatment Selected
All Cases of Perforated Appendices

Duration of Symptoms	Immediate Operation		No Operation		Unsuccessfully Delayed		Total	
	No. Cases	Deaths	No. Cases	Deaths	No. Cases	Deaths	No. Cases	Mortality Per Cent
1-24 Hours	19	0	1	1[1]	1	0	21	4.8
25-48 Hours	72	10	3	0	0	0	75	13.3
49-72 Hours	28	3	11	0	1	0	40	7.5
4 Days	18	4	8	2[2]	4	0	30	20.0
5 Days	9	4	8	0	0	0	17	23.5
6 Days	7	3	10	0	1	0	18	16.7
7 Days	2	0	4	0	2	0	8	0
8 Days	1	0	1	0	0	0	2	0
9 Days	3	0	2	0	1	0	6	0
10 Days	2	1	5	0	1	1[4]	8	25.0
Longer	10	1	11	1[3]	2	2[5]	23	17.4
TOTAL	171	15.2%	64	6.2%	13	23%	248	13.3%

[1] Death from general peritonitis.
[2] Death from pneumonia.
[3] Death from retroperitoneal abscess.
[4] Death from subphrenic abscess.
[5] Death from pulmonary embolus.

TABLE III

Age Distribution According to Treatment Selected All Cases of Perforated Appendicitis

Age	Immediate Operation		No Operation		Unsuccessfully Delayed		Total	
	No. Cases	Deaths	No. Cases	Deaths	No. Cases	Deaths	No. Cases	Mortality Per Cent
1-5 Years	8	5	1	0	0	0	9	55.5
6-10 Years	22	4	3	0	2	1[4]	27	18.5
11-15 Years	35	5	7	0	2	0	44	11.4
16-20 Years	28	1	13	1[1]	1	0	42	4.8
21-30 Years	35	4	12	0	2	0	49	8.2
31-40 Years	16	2	12	0	0	0	28	7.2
41-50 Years	15	2	6	1[2]	4	1[5]	25	16.0
51-60 Years	11	3	6	2[3]	1	0	18	27.7
61-70 Years	1	0	2	0	1	1[5]	4	25.0
71-80 Years	0	0	2	0	0	0	2	0
TOTAL	171	15.2%	64	6.2%	13	23%	248	13.3%

[1] Death from generalized peritonitis.
[2] Death from retroperitoneal, abscess.
[3] Death from pneumonia.
[4] Death from subphrenic abscess with rupture through diaphragm.
[5] Death from pulmonary embolus.

TABLE IV

Analysis of All Cases of Perforated Appendicitis Showing the Improvement in Mortality Rate in the Period 1934-1937 with Consistent Use of the Conservative Regime when Indicated except in Cases of Diffuse Peritonitis in Children

1930-1934	Localized Peritonitis		Abscess		Diffuse Peritonitis		Total	
	No. Cases	Deaths	No. Cases	Deaths	No. Cases	Deaths	No. Cases	Deaths
Immediate Operation	34	3	45	5	18	8	97	16
Unsuccessfully Delayed	0	0	7	3	0	0	7	3
No Operation	6	1	11	1	1	1	18	3
TOTAL	40	10%	63	14.3%	19	47.4%	122	18%
1934-1937								
Immediate Operation	31	2	30	2	13[1]	6	74	10
Unsuccessfully Delayed	2	0	3	0	1	0	6	0
No Operation	7	0	39	1	0	0	46	1
TOTAL	40	5%	72	4.2%	14	42.8%	126	8.7%

[1] Ten of these were in children under 13 years of age, of whom five died. The remaining three were in adults with symptoms of less than two days. One of these died the day of operation of shock.

TABLE V

Complications and Duration of Hospitalization in Cases Treated Conservatively without Operation

	Number of Cases	Non-Fatal Complications	Fatal Complications	Average Hospital Stay Non-Fatal Cases
Local Peritonitis	13	Ileus 1	Pneumonia 1	17.4 Days
Abscess	50	Recurrence of Signs 2	Pneumonia 1 Retroperitoneal Abscess 1	15.7 Days
General Peritonitis	1		Peritonitis 1	
TOTAL	64	3 or 5%	4	16 Days

TABLE VI

Complications and Duration of Hospitalization in Cases in Which Conservative Treatment Was Abandoned Unsuccessfully Delayed

	Cases	Days in Hospital Before Operation	Non-Fatal Complications	Fatal Complications and Cause of Death	Total Average Hospital Stay in Non-Fatal Cases
Local Peritonitis	2	14	None	None	34.5 Days
Abscess	10	8.7	None	Pulmonary Embolus 2 Subphrenic Abscess with rupture through diaphragm 1	28.8 Days
General Peritonitis	1	5	None	None	26 Days
TOTAL	13	9.2	None	3	29.7 Days

TABLE VII

Complications and Duration of Hospitalization in Cases with Immediate Operation

	Number Cases	Non-Fatal Complications	Fatal Complications and Cause of Death	Average Hospital Stay, Non-Fatal Cases, Days
Local Peritonitis	65	Residual Abscess 3 Ileus 2 Femoral Thrombophlebitis 2 Parotitis 1 Massive Collapse Lung 1	Peritonitis 2 Pneumonia 1 Pulmonary Embolus 1 Subphrenic Abscess 1	23.1
Abscess	75	Ileus 4 Residual Abscess 4 Fecal Fistula 2 Femoral Thrombophlebitis 1 Empyema 1 Purulent Bronchitis 1	Peritonitis 3 Pulmonary Embolus 1 Multiple Lung Abscess 1 Retroperitoneal Abscess 1 Coronary Occlusion 1	26
General Peritonitis	31	Ileus 4 Residual Abscess 2 Peri-rectal Absces 1	Peritonitis 8 Shock 3 Parotitis 1 Anesthesia 1 Residual Abscess with Rupture into Peritoneum 1	37.2
TOTAL	171	29 or 20%	26	26.1

Chairman Moore: The discussion on this paper will be opened by Dr. Randolph Jones.

Dr. Randolph Jones (Durham): Mr. Chairman and Members of the Surgical Section: Those of us who have been working on this question are very much interested in this study that Dr. Gardner has been making on the cases of acute appendicitis which has been done conservatively during the past seven years. We have a definite impression that the patients handled conservatively got along better than those who were subjected to operation. We appreciate fully the contrast and the figures which mean the first four and the last three which show it is a clear review of the rationale of this method of treatment, the course followed by the cases so treated.

The indication is for continued conservative treatment and for operation which we believe constitutes a very definite contribution to our understanding of the subject. It cannot be emphasized too strongly that this method should be used only in those cases where the perforation of the appendix can be diagnosed. It is not a method to be applied by the physician at home, and should be applied, as Dr. Gardner has stated, only in the hospital under constant supervision of the surgeon who is handling the case.

In the event of a failure of these masses to subside on continued resolution, in the event of continued elevation of temperature for weeks, and in the event of pains which these patients usually do not have unless some complicated factor arises—in the event of any of these untoward actions, immediate operation can be instituted.

It is difficult for one who has not had some experience with this procedure to appreciate the results that can be obtained by their application. I thought you might be interested in a series of statistics from several articles by English and American authors which we have gotten together during the past three weeks. I will show you some slides.

(Slide) Here is a series of slides by several men who have had experience over a period from 1924, when this article was published by Dr. Cleveland, in the "Annals" of 1924, and you will notice that his mortality dropped under the application of the conservative regime between 1901 and 1919 from 10.5 per cent to 4.2 per cent.

(Slide) That is at the Lankenau Hospital. The second slide shows 767 cases from a London author, showing those treated by immediate operation with a mortality of 13.2 per cent and those treated by delayed operation of 14 per cent and by no operation, zero, combining the mortality with those treated conservatively with a figure of 4.2 per cent. Incidentally, he mentions that of the 214 cases treated conservatively 67 per cent subsided completely without the necessity of surgical intervention. That is under the conservative regime.

(Slide) Here is another London author, an Englishman, who reports virtually the same experience which I will pass over rather rapidly.

(Slide) This next slide is similar to the Englishman's with the same experience. This article was published in 1931. The article which you just saw was published in 1925.

(Slide) Here is an article published by Dr. Carl Potter, also quoted by Dr. Gardner, and published in 1924, in the Journal of the American Medical Association, of which twenty-eight or twenty-nine subsided; eighty-five cases of spreading peritonitis, perforated appendicitis, twenty-nine subsided, forty-eight developed peritonitis and eight died. The mortality was 12.5 per cent. Forty-eight of these cases had a mortality of 12.5 per cent and the mortality for the entire group was 9.3 per cent.

(Slide) This last slide is of particular interest to me because I reviewed all the cases about two years ago. We fully appreciated then that this method was of possible value, but since then Dr. Adams of the University of Minnesota reported 110 cases of peritoneal appendicitis in children. It is there treated conservatively. The 85 cases subsided completely and the remaining ten necessitated drainage. It is of particular interest that of the cases that subsided completely, that is the cases that were treated conservatively, these 110 cases, ninety-five returned later for appendectomy after complete subsidence. This seems to prove our report of treatment for appendicitis that we should continue to do several things. We should continue to educate the public that whenever the symptoms of abdominal trouble appear suggesting acute appendicitis, the individual should consult a physician. We should continue to educate people in regard to the dangers of cathartics. We should continue to improve our diagnostic acumen, and particularly teach our medical students that they must direct examinations on all these patients.

There was a very interesting editorial in "Surgery" on the necessity of rectal examination and diagnosing rectal cases. This applies particularly to perforated appendices and it seems this group will always be with us. This Ochsner method which has been so well covered by Dr. Gardner constitutes something of real value in these cases.

Chairman Moore: Dr. Gardner's paper is now open for general discussion.

Dr. C. L. Haywood, Jr. (Elkin): I want to congratulate Dr. Gardner on his excellent paper. I enjoyed it very much. One point, I think, in deciding when to operate on these patients, offering the best indication of the prognosis as to whether the peritonitis is spreading or localizing, is the using of the sedimentation rate. The sedimentation rate in early appendicitis helps us a great deal in distinguishing in the classical dilemma between valvulitis and appendicitis, having pains and localized symptoms in the right lower part. If the case has gone on to peritonitis

deformans then the sedimentation rate is increased. By following that rate closely in addition to temperature, pulse, white blood count, etc., one has an excellent indication as to whether the case is growing worse or whether it is improving.

Of course, if the sedimentation rate continues to increase then an immediate operation has to be performed.

Chairman Moore: Is there any further discussion? This is a very important subject for any general surgeon.

Dr. T. C. Bost (Charlotte): I think in all probability this is the most important subject that will come before this session, especially when we consider the mortality and the morbidity of the type we deal with and the frequency of appendicitis with rupture. I will unhesitatingly say that I think this plan of treatment has a big field and it has not been put into practice as much as it should have been in this particular locality of the country.

Still there are exceptions to the rule. I am sure that we have all had this experience in at least a few cases. The patient comes in, has all the appearance of peritonitis with a ruptured appendix. When the case is subjected to operation we find, much to our surprise, that the appendix is not ruptured. In other words, we occasionally see the type of case that gives all the symptoms of a ruptured appendix when as a matter of fact it is nothing more than an impending rupture.

Of course, it would be a great mistake not to operate on that patient and remove the impending ruptured appendix. That is in this particular group. There is one other group of cases. The patient comes in late. He may or not have been on the so-called Ochsner modification plan of treatment with no walling-off process at all. That is the type of case that has a pre-rupture and has a large accumulation of pus in the abdomen, actually distending the abdomen with no attempted walling-off process at all.

In this type of case I feel as though I have saved a few lives that otherwise would have been lost, by simply making a small pelvic opening in the mid-line in a thin individual. Usually in these cases the wall is well thinned out and I make an incision under local anesthetic and put a tube down in the abdomen, in the pelvis. In such a case when the peritoneum is nicked the pus literally spurts up into your face under such pressure. I feel that this particular type of case has been dealt with successfully by me and that I have saved some lives that otherwise apparently would have been doomed. It is more than simply nicking the peritoneum and, incidentally, this can be done right in bed. I see no objection to taking the patient to the operating room and doing this operation. I think this would offer a case the benefit of recovery that it might not otherwise have and that might be doomed.

I am not talking about a case that has a walling-off, but a case that has free pus under an enormous amount of pressure.

Dr. R. B. McKnight (Charlotte): I agree with Dr. Bost that this is probably the most important subject that has probably come up before this session and that will come up this afternoon. Three hundred cases or more die of appendicitis in North Carolina every year. We hear excellent papers. The one we have just heard by Dr. Gardner is on one method of treatment. On the other hand, we hear just as excellent papers on other methods of treatment. When you size a whole situation up you find that there is no great difference in the mortality rate of any type of treatment used provided it is done by an expert man and provided it is the type of treatment he is accustomed to.

The question of reducing mortality in appendicitis does not lie primarily in the technique which is used. It lies, as I see it, and tried to point out yesterday afternoon in a paper before the session on public health, in the domain of public health activities. The officials of public health agencies can do far more than you and I can do in the way of reducing the mortality from appendicitis. Over ninety per cent of all deaths from appendicitis are due either to delay or the use of laxatives.

The figures which Dr. Bower from Philadelphia has pointed out show that in a series of over 4,000 cases in which operations were performed within twenty-four hours there was one in forty-nine died. I am not speaking of what kind of operation was made. In a series of nearly 3,000 cases in which the operation was delayed until after seventy-two hours, the figures were that one in eleven died. As to the use of laxatives, in a large series of cases, of those who had received no laxatives, one in seventy-one died regardless of the method of treatment that was used. Those which had received more than two laxatives resulted in the death of one in eight.

There is no reason to believe that those figures are any different in the City of Philadelphia than they would be right here in North Carolina or anywhere else. I believe the way to get this appendicitis problem solved is not primarily in arguing about what type of technique we are going to use in handling the ruptured case, but to get these public health agencies and officials interested because they are in a position to do it better than we are, those who are in active practice. We should get them interested in informing the public, through the radio, through the press, through the schools, through dozens of ways in which it can be done, of the dangers of those two p's, procrastination and purgation.

Chairman Moore: Dr. Gardner, will you close the discussion?

Dr. Clarence E. Gardner, Jr. (Durham): I wish to thank the gentlemen for their kind discussions. I realize the subject is very controversial and is one that is presented to an audience, on the whole, I

think, which is unsympathetic to this method of treatment. We feel it has been excellent. Dr. Haywood suggests that the sedimentation rate is excellent. We have not used it but we will try it. I agree with Dr. Bost that one of the great disadvantages of such a regime of treatment is the fact that perhaps certain patients will be so treated who do not have ruptured appendices. That is one of the major counter-indications to the whole principle of the plan. We have made every effort not to overlook an unruptured appendix.

I think it is interesting to note that in 171 patients who have been operated on immediately within forty-eight hours of the onset of symptoms, over half have had ruptured appendices.

We lean over backwards in our effort to operate on patients and not to operate if there is any possible question of it not being ruptured. I think he is quite correct in stating that delay in operation is probably unwise. Dr. McKnight certainly has hit the whole question on the head when he states the major question in mortality is early recognition of the condition and removal of the appendix before it ruptures. I thank you. (Applause.)

Chairman Moore: I wish to appoint the Nominating Committee sometime later this afternoon to select the ticket for the chairman next year. I shall appoint on that committee Dr. McKnight, Dr. Coddington, Dr. Lyday.

The next paper on the program is by Dr. Donnell B. Cobb, of Goldsboro, on "Perineal Hernia."

Dr. Cobb presented his prepared paper. (Applause.)

POSTERIOR VAGINAL HERNIA

Donnell B. Cobb, M.D.
Goldsboro, N. C.

Posterior vaginal hernias are not often correctly diagnosed. They are usually thought to be simple rectoceles. Because they are so readily mistaken for such common clinical entity they deserve special emphasis. For unless such a hernia, when present, is recognized and its sac obliterated no operation for rectocele or prolapse will relieve the patient of her symptoms. Failure to correctly treat a co-existing perineal hernia undoubtedly accounts for some of the poor results that occasionally follow operations for the relief of pelvic or genital prolapse. Not all of the blame for such failures can be put on "poor healing," or "thin tissues." To repair a prolapsed rectum and fail to find and obliterate a hernial sac projecting downward from the pouch of Douglas is just as certain to result in a recurrence as to overlap and strengthen the badominal wall in a case of inguinal hernia and leave the sac undisturbed.

Cases are recorded in which failure to recognize vaginal hernias resulted fatally. Gunz reports two such cases. In one the hernial sac

was mistaken for a cyst and aspiration resulted in peritonitis and death. In the other the hernial sac was thought to be a polyp. But, after excision, this supposed polyp was found to contain a portion of the transverse colon and omentum. Thomas records a case in which the hernia was mistaken for an abscess. Bueermann also reports from the literature two cases in which the sac ruptured with evisceration and death, and one case in which death occurred from incarceration. Huet describes a case in which a fall astride a trestle resulted in rupture of the intestine contained within the hernial sac resulting in a fatal peritonitis. It is readily appreciated that an unsuspected hernia may greatly enlarge under the straining of labor and offer a real difficulty and danger in delivery.

Such isolated catastrophies are of scientific interest. But it is the ease with which such a hernia may be overlooked, or mistaken for a rectocele, that places it in the realm of practicality.

Case One. Mrs. R., 60 years of age, presented herself in October 1937, complaining of vaginal protrusion. After the birth of her second and last child she developed a vaginal protrusion which had gradually become worse. Eighteen months previously she had undergone a ventral suspension of the uterus and a perineorrhaphy. Shortly after her discharge from the hospital, however, the vaginal protrusion recurred and was a source of constant discomfort.

Following this postoperative recurrence various pessaries were tried in an effort to support the protrusion. Although these pessaries seemed to remain in place the protrusion would slip beneath the pessary and make its appearance beyond the introitus.

Examination disclosed the lower abdominal scar of the previous uterine suspension, a well healed scar of the perineorrhaphy, and a satisfactory perineal body. The posterior vaginal wall presented a protrusion the size of an orange and extending beyond the introitus. The mass was readily reducible but immediately reappeared on straining or standing. The uterus was in moderate procidentia and there was a small cystocele.

The preoperative diagnosis of moderate uterine prolapse, rectocele and cystocele was made.

At operation, November 5, 1937, the abdomen was opened. Figure 1. The uterus was found attached to the anterior abdominal wall by a fibrous band 5 cm. in length, and about this band were draped several coils of ileum. The band was severed and ligated. After closure of the abdominal incision the patient was placed in the lithotomy position and a vaginal hysterectomy performed. The broad ligaments were approximated and sutured beneath the bladder onto the under surface of the pubes. On dissecting the perineum a hernial sac was found, lying between the rectum and vagina and extending beyond the introitus. The

sac was dissected free, its neck closed with a purse string suture and attached to the posterior aspect of the approximated broad ligaments. The excess of the sac was excised and the operation was completed by approximating the levator ani muscles as high as possible.

Fig. 1—Posterior Vaginal Hernia.

This resulted in a satisfactory support of all structures and this condition obtains at the present.

Case Two. Miss G., 51 years old, presented herself in December 1937, with the complaint of backache and "falling of the womb." At the age of 14 years while carrying heavy buckets of water from the well to the house, she felt something "give away" and soon noticed a protrusion at the vulva. She had not consulted a physician previously concerning this condition and there had been no effort made to support it. The protrusion gradually increased until it now interfered with walking and sitting.

Examination revealed a grade 2 uterine prolapse. The posterior vaginal wall consisted of a bulbous protrusion extending well beyond the introitus. There was an associated cystocele. The diagnosis of procidentia was made but the existance of a posterior vaginal hernia was not suspected.

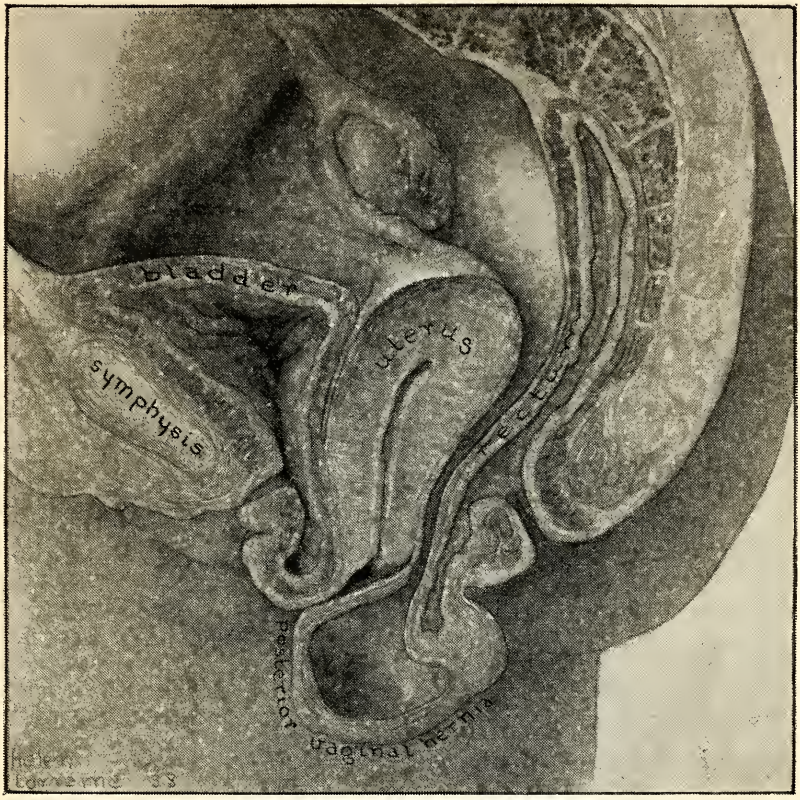


Fig. 2—Posterior Vaginal Hernia.

On December 3, 1937, a vaginal hysterectomy was performed. Figure 2. The cystocele was corrected by suturing the approximated broad ligaments beneath the pubes. On reflecting the posterior vaginal flap a hernial sac was encountered. It was chiefly this posterior vaginal hernia rather than a rectocele that accounted for the protrusion of the posterior vaginal wall. The sac was isolated, its neck closed and sutured to the posterior aspect of the approximated broad ligaments. The excess of the sac was excised and the operation completed as a high perineorrhaphy.

The patient's condition remains satisfactory.

It seems likely, in view of the history of this case, i.e., the vaginal

protrusion appearing at such an early age in a nulliparous individual, that the posterior vaginal hernia was the first abnormality to develop as a result of the heavy lifting. And that by its long continued dragging action it was responsible for pulling down the uterus and bladder. I am unaware of another case having manifested itself so early in life.

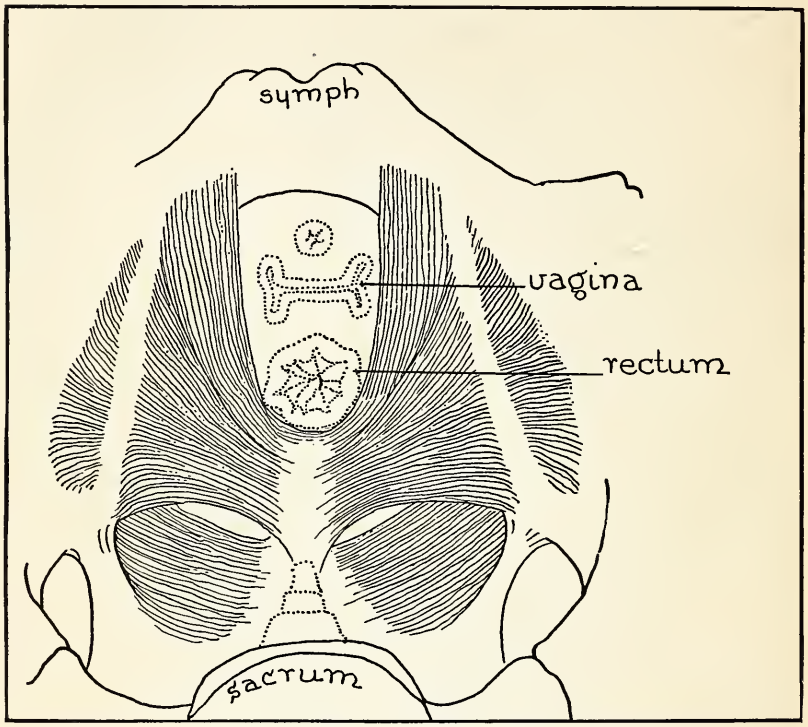


Fig. 3—Posterior Vaginal Hernia.

Etiology: Posterior vaginal hernias arise from the bottom of Douglas' pouch. The main bodies of the levator ani group of muscles and the stronger fascial supports pass lateral to the vagina and rectum, and so the floor of Douglas' pouch contains but little muscular tissue and a comparatively thin fascia. It is through this weaker portion of the pelvic sling that the hernia emerges. Figure 3. Dissecting its way downward between the rectum and the vagina it makes its appearance beneath the posterior vaginal wall.

Whereas, occasionally such hernias have been found in nulliparous women the majority of them have occurred in those who have borne many children. Considering the relaxation of the tissues that accompanies pregnancy and the unavoidable trauma incident to delivery it seems unusual that such hernias do not occur more frequently.

Jones has called attention to the unusually deep cul-de-sac found in some individuals and expressed the opinion that this is the determining factor in the development of such a hernia. He believed such an abnormal deepening to be of congenital origin and that this probably explained the occurrence of a posterior vaginal hernia in some individuals and not in others.

Symptoms: A posterior vaginal hernia does not present characteristic symptoms. It does produce a sensation of pelvic heaviness and dragging down similar to rectocele, for which it is so often mistaken. The return of the posterior vaginal protrusion after one or more operations for the relief of a supposed rectocele is not infrequently the first thing which creates suspicion as to the existence of a hernia. In 40 per cent of the collected cases the true nature of the condition was not recognized at the time of the examination, or at the time of the first operation.

Physical Findings: Posterior vaginal hernias vary in size. They may be small and situated high beneath the posterior vaginal wall or large and protrude to or beyond the introitus. Thomas and Miles each record a case in which the hernial sac extended half way down the thighs. A posterior vaginal hernia can occur without an associated relaxation of the pelvic structures, or it may be only a part of the more or less general pelvic prolapse. Since most of them do occur in women who have borne many children there is apt to be an associated sagging of the pelvic floor. A long standing hernia of Douglas' pouch may drag down the pelvic viscera with it, thus being primarily responsible for a general pelvic relaxation, as in case 2.

Occurring independently and passing downward between the uterosacral ligaments, burrowing its way between the rectum and vagina it is comparable with an indirect inguinal hernia. As a part of a general pelvic prolapse in which the peritoneum of Douglas' pouch sags downward along with the rectum, uterus and bladder it is comparable with a large sliding hernia. In either instance the condition represents a true hernia; namely, a protruding peritoneal sac containing abdominal contents. If such a condition is to be cured this prolapsing of Douglas' pouch must be treated as any other hernia, that is, obliteration and closure of the sac and repair of the defect.

One characteristic of this hernia is its disappearance when the recumbent position is assumed, only to immediately recur on straining or standing. Or, if it does not spontaneously reduce itself with the patient lying and the hips elevated it may easily be replaced within the abdominal cavity by slight pressure from the examining fingers. This reduction is frequently accompanied by a gurgling sensation as the intestines are pushed upward into the abdominal cavity. Strangulation or incarceration of the contents, of course, would make reduction impossible. Bueermann found that stroking or pinching the hernial

sac stimulated peristalsis which was plainly visible through the posterior vaginal wall.

The one typical sign of posterior vaginal hernia is demonstrated by rectal examination. Figure 4. With the examining finger introduced in the rectum and pressed toward the vagina it will be found that the

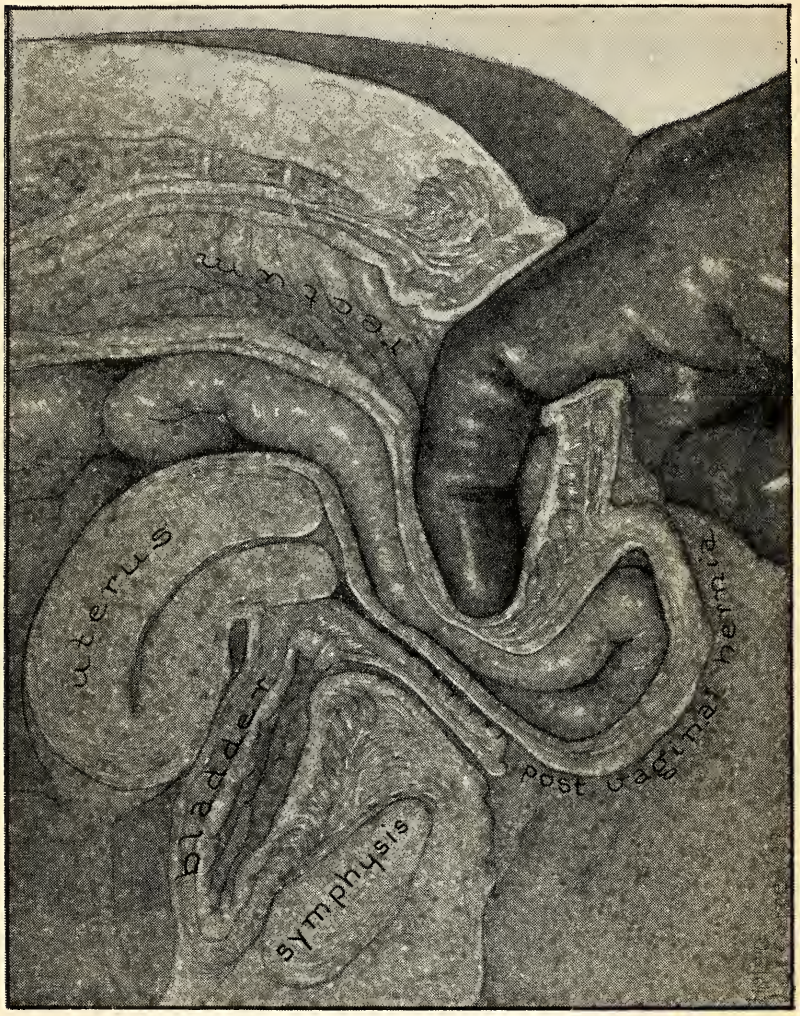


Fig. 4—Posterior Vaginal Hernia.

bulging of the anterior rectal wall does not account for all of the vaginal mass. With the finger so placed and the patient straining the hernial sac can be seen and felt to protrude anteriorly to and independently of the anterior rectal wall.

Differential Diagnosis: Cysts and tumors of the vagina are rare occurrences and offer little diagnostic difficulty. It is the common condition of rectocele that usually confuses the diagnosis. It is because of the close similarity of these two conditions on casual inspection and because they may be co-existent that so often results in the hernia being overlooked. The surgeon may not be aware of the existence of a posterior vaginal hernia until after he has reflected the vaginal flap preparatory to repairing the perineum. Even then the hernial sac may escape his attention.

Treatment: The use of pessaries is not successful in controlling a hernia of Douglas' pouch. Whereas, a pessary may very effectively support a rectocele the sac of the hernia will slip beneath the pessary and reappear at the introitus.

Posterior vaginal hernias, being true hernias, are best treated by surgery. As in any other hernia the operation should accomplish isolation, eradication and closure of the sac and repair of the defect. Numerous procedures have been employed to accomplish this. No uniform operation is suitable because of the wide variation of co-existing pelvic prolapse. These hernias may be operated upon satisfactorily by the vaginal route, through an abdominal incision, or by the combined abdomino-perineal procedure.

If the hernia has been correctly diagnosed preoperatively, or if it is first recognized during the course of a perineorrhaphy it may be cared for through a perineal incision. After isolation of the sac its neck is closed with a purse string suture, incorporating the uterosacral ligaments and the posterior wall of the uterus. The redundant portion of the sac is excised and the operation completed as a high perineorrhaphy.

When associated with a uterine prolapse a vaginal hysterectomy may be done. The broad ligaments are brought together well posteriorly and the closed neck of the sac attached to posterior aspect of these approximated ligaments.

Hundley has devised a simple means of disposing of the sac and obliterating Douglas' pouch in conjunction with the interposition operation. After invaginating the cul-de-sac the apex of the hernia is attached high onto the posterior surface of the uterus.

A few cases have been treated successfully by total colpectomy.

When pelvic complications necessitate an abdominal incision the hernial sac can be cared for very effectively from above. A series of purse string sutures are placed within the sac, beginning at the bottom and extending upward to the utero-sacral ligaments, as advocated by Moschowitz in the treatment of rectal prolapse.

If both an abdominal and vaginal operation are indicated it is well to make the perineal incision first. The hernial sac is isolated and any other indicated vaginal procedure accomplished. Then through an abdominal incision the sac is disposed of. Either its neck is closed and the

excess of the sac excised or the apex of the sac is attached high onto the posterior wall of the suspended uterus.

The general condition of the pelvic floor and any co-existing pathology will determine the method best suited for the individual case. It matters little which operation is employed so long as the existence of the hernia is recognized, its sac eradicated, its neck closed and the defect repaired.

Conclusions

1. Posterior vaginal hernia may occur with or without an associated pelvic prolapse.

2. Clinically they are usually mistaken for rectocele.

3. Failure to find and obliterate the sac at operation will result in a return of the hernia and a continuation of the symptoms.

4. The recurrence of a supposed rectocele after one or more operations is not infrequently the first thing which creates suspicion as to the presence of hernia.

5. Associated pelvic pathology will determine the choice of operation. But the sac must be obliterated and closed and the defect repaired if a permanent cure is to result.

References

Black, W. T., Posterior Vaginal Hernia. Am. J. Obst. & Gyn. 1934, 27, 837.
Bueermann, W. H., Vaginal Enterocele. J. Am. Med. Assoc., 1932, 99, 1138.
Green, E. K., and Buzzelle, L. K., Vaginal Hernia. Report of two cases operated. Minnesota Med., 14, 163, 1931.
Gunz—Quoted by Bueermann.
Huet, Rupture Intestinale Part contusion d'une Elytrocele. Bull. et Mem. Soc. Nat. deChir., 60: 936, 1934.
Hundley, J. M., Treatment of Vaginal Hernia Associated with Prolapsus Uteri. South. Med. J., 1927, 20, 345.
Jones, Daniel, Relation of the Deep Culdesac to Prolapse of the Rectum and Uterus. Boston M. & S. J., 1936, 175, 623.
Masson, James C., and Simon, Harold E., Vaginal Hernia, Surg. Gyne. & Obst. 1928, 47, 36.
Masson, James C., Prolapse, Cystocele and Rectocele and True Vaginal Hernia. J. Am. Med. Association, 1932, 99, 1143.
Miles, Lee Morroe, Pelvic Hernia, Surg. Gyn. & Obst., 1926, 42, 482.
Phanouf, Louis E., Voluminous Hernia of the Culdesac of Douglas Treated by Total Colpectomy. Am. J. Ost. & Gyn. 1937, 34, 152.
Thomas, H. T., Vulvar and Vaginal Enterocele. New York Med. J., 42, 705, 1885.

Chairman Moore: The discussion of this paper will be opened by Dr. R. A. Ross of Durham.

Dr. R. A. Ross (Durham): I consider it a privilege and pleasure to open the discussion of Dr. Cobb's paper. We must remember the two diaphragms of the body, the thoracic diaphragm and the pelvic diaphragm. Through both of these something passes from the vagina into the peritoneum. Both of these structures are subject to herniation. As a result they are of two origins, either congenital or traumatic. Both of them come into play with the added factor of a perineal hernia or the hernia that Dr. Cobb described with protrusion at the vulva.

(Slide) This is the first view. This diagram shows, he said, the

coccygeus muscles behind the perforans and operative muscles on the side and transverse muscles in the perineal body.

(Slide) This is a view from below. This has been completely opened here, and this again is another view of the same thing that Dr. Cobb described. This area here is the one he mentioned.

(Slide) This is a view from below showing this thing. We must remember the levator ani muscle is near the pelvis and in front of the rectal mouth. One-third of this muscle surrounds the rectum and it is a point where the levator ani muscle goes into the mouth itself. It is the weakest point during child-birth. That is going to be the weak point and that is the thing. The added fact which Dr. Cobb emphasized should be borne in mind of the congenital abdomen which happens with such things as the deep pelvis to be of moment.

I think he has called attention to it. After the treatment I am inclined to think the approach from below is better because it is less difficult, and I want to bring to your attention the possibility of relieving a condition, which I think is most important. Dr. McKnight has spoken of mortalities from appendicitis. If you will consult statistics further you will find twenty-five per cent more women died in North Carolina of this other trouble than of acute appendicitis which is a preventable disease. This operation will take care of everything, and in addition to that will allow the removal of the cervix at that time.

If you remember, an amputated cervix will not form pus. The denudation, as you see, is done there with incision of the cervix and an approach into the posterior cul-de-sac there that will give you just what you get down in the vaginal region and allow you to lay open the sacs along this line.

My recollection of hernias is that the most important thing to deal with is the matter that Dr. Cobb mentioned. If we had only one thing to do perhaps that would be the pelvis. By going in posterially before these sutures are placed we have an opportunity to have a cul-de-sac hernia. There you see the posterior vaginal mucous membrane. You can bring the so-called uterosacral ligaments in front, which will do exactly the same thing that you do with an inter-positum operation, and will relieve the patient.

(Slide) After that is done a simple posterior appendectomy—not in this, but in a great many cases, the so-called flap operation—is performed. I don't think you can approach the problem of cul-de-sac hernia when you button-hole the vagina as you can when you actually dissect it free and get into the thing. That is how you get in and take care of the condition, as described by Dr. Cobb.

This operation has been done since 1880 in Manchester, England. It has now been practiced in this country by Gorfinkle in New York and by Lynn in Philadelphia.

This is a supplementary discussion to a splendid paper, and I want

to call to your attention this possibility which will give you further deliberation which I consider necessary for the cervix particularly. Then child-bearing I believe can be handled very well from below either by this or by the so-called Mayo operation which they have done and which they have popularized. That is the point I want to bring to you.

Chairman Moore: This excellent paper is now open for general discussion.

Dr. Addison Brenizer (Charlotte): Dr. Cobb not only has in mind thorough reparation of a cyst which would be pushing back of the bladder and the gathering there of the vesicovaginal fascia of the so-called triangular ligament, but he is covering another subject. He is covering the subject where the perineum slips beneath the rectum and what structures go to make up the vagina with the perineum bulging between those two structures. It is not an ordinary rectocele. Of course, when he gets a rectocele it breaks through the triangular ligament and the fibers of the levator ani muscle posterior. He has here in this instance the perineum which runs down between the vagina and the rectum making a hernia. That is the distinction he is making and there is such a thing as a perineal hernia.

What Dr. Ross has had to say is altogether pertinent. One should repair thoroughly the anterior vaginal wall by letting the bladder slip back up, repair the triangular ligaments and those fibers that run there between the uterus and the vagina.

In addition to that the perineum may slip between the rectum and vagina and form a ventral hernia. That is what Dr. Cobb is speaking of. In that instance, the perineum has to be very carefully pushed back up or brought back down before the anterior and the posterior perineorrhaphy is done.

Chairman Moore: Is there any further discussion? If not, Dr. Cobb, will you close the discussion?

Dr. Donnell B. Cobb (Goldsboro): I have nothing more to say, Mr. Chairman.

Chairman Moore: The next paper on the program is "Pathology of the Lining of the Blood Vessels," by Dr. R. B. Davis, of Greensboro.

Dr. Davis presented his prepared paper.

PATHOLOGY OF THE LINING OF THE BLOOD VESSELS

R. B. Davis, M.D.
Greensboro, N. C.

When one begins to discuss this subject immediately he realizes the futility of trying to cover the whole field in as short a time as is allotted to this paper, therefore we will attempt to discuss only Phlebitis, Thrombo-Phlebitis and Embolism.

After carefully reviewing thirty articles written on the subject and the statistical reports of 200 physicians, reporting on 1,911 cases during the period of twenty-five years, between the years of 1912 and 1937, the essayist is forced to the conclusion that very little new has been learned about the diagnosis, treatment, and prevention of these conditions, and what has been learned—with a few exceptions—was learned as a result of physicians using common horse sense rather than expensive, time-consuming laboratory experiments.

According to Dr. George Brown, who reported in 1927 eighty-seven cases that occured at the Mayo Clinic, the incidents of Phlebitis, with or without its complications, occurred 66 per cent in women and 34 per cent in men. The average age was forty-seven. Eighty-four and a half per cent followed intra-abdominal operations, 40 per cent followed pelvic operations and 60 per cent followed operations of the gall bladder, stomach and appendix. The months in which Phlebitis was most frequently found were March, April, July and August. He claims that fatal pulmonary Embolism is rare but that pulmonary Infarct is rather common.

Dr. H. H. Gamble from the Kings' Daughters' Hospital reports that in 4,000 major operations pulmonary Emboli occurred 195 times, and in fractures 172 times.

Dr. Donald C. Geist of Philadelphia reported thirty-eight cases and agreed with Dr. Brown that females are more often affected than males. His average age is forty and a half years.

Dr. Walter Hume quotes Dr. Klein of Vienna, who states that seventy cases of Phlebitis occured following 5,851 operations.

Dr. Hampton reported twenty-one cases in 205 major operations; Dr. Bandy reported thirteen cases in 1,000 operations; Dr. Ranzi reported seventy-two cases in 6,071 operations.

Dr. Hume thinks it is safe to estimate that one per cent of the surgical cases will develop intra-vascular pathology. He further states that many cases follow medical diseases and cites the report of Drs. Rogers and Miller of Boston who reported 206 cases of Thrombo-Phlebitis occuring with equal frequency in medical and surgical maladies.

Another report from Massachusetts General Hospital during a period of seven years is given in which 113 cases occurred, seventy-six of which were surgical and thirty-seven were non-operative.

Drs. Mahorner and Orchner of New Orleans reports thirteen cases occurring in 1,040 laparotomies; Dr. Schneck reports forty-eight cases occuring in 7,130 laparotomies; Dr. Cordiur is quoted as estimating that 2 per cent of all laparotomies are followed by Phlebitis.

Dr. Henderson of Mayo Clinic reported that during a period of ten years from 1917 to 1927, 46 per cent of the cases of prostatic surgery developed pulmonary embolism, while only 3 per cent of surgery of the gall bladder and stomach was followed by embolism.

Dr. Harold Neuhof of Mt. Siani Hospital, New York, reported forty-one cases of Phlebitis developed in 150 patients with severe surgical Septicemia.

Dr. Theist of Rush University states that pulmonary complications seldom follow Phlebitis of the veins of the arms.

Dr. Zimmermin states that pulmonary Embolism does not follow Phlebitis of the superficial veins.

Pathology of Thrombo-Phlebitis and Embolism

The pathology of Phlebitis and its complications do not enjoy so varied opinions. All agree that there must be an inflammatory process due either to a chemical or bacteriological toxin, but as to the formation of the clot there is dissension. Dr. Haynes and Dr. Benzozera claim that there is an enormous increase of platelet within the thrombus. McPheeters thinks leucocytes form the basis of the thrombus.

Dr. Andrews of Chicago partially confirms the belief of Drs. Haynes and Benzozera that blood platelets are much increased in the clot.

Etiology

The most confusing of all phases of the subject of Phlebitis and its complications is that of etiology. Everything from "Dan to Bersheba" has been reported as being the cause of Phlebitis. Some of them and their advocator are:

Rosenow—bacterial infection locally or in the blood stream. Geist—bacterial infection, although he reports thirty-eight cases of phlebitis and only rarely found blood culture positive. Drs. Wyatt and Goat suggest chronic lymphoid Leukemia as a cause but cites only one case. Hume names as predisposing causes alcohol, tobacco, diet, intravenous medication, obesity, trauma, low blood pressure, slow blood stream, low metabolic rate, diseases of lining of blood vessels, but lays special emphasis upon slow blood stream and low metabolic rate. Dr. W. Howard Evans of England states that there is no convincing proof that infection is the origin of primary Thrombus. Although French surgeons have repeatedly cut down on a thrombus and gotten a heavy bacterial growth from the culture.

Dr. Andrews of Chicago made an exhaustive study of the blood of postoperative cases twenty-four and thirty-six hours respectively after

operations and found no significant changes in the leucocytes, blood pressure, temperature, blood sugar, water contents of blood, chlorides, carbon dioxide but did find a profound change in the mineral salts balance. Blood platelets were high the day after operation, especially where much trauma was done. He concludes, therefore, that increased blood platelets adhering to the blood vessel wall is an important cause of Thrombo-Phlebitis.

Henderson of Mayo's thinks that obesity plays a part as a predisposing cause, and at the Clinic in a series of eighty-seven cases fifteen were obese. However, Snell does not believe that obesity has any bearing on the subject.

Drs. Bancroft and Brown believe that chemical changes in the blood are the most important factors. Dr. Miller says that stasis of the blood stream is an important factor although Hunter and others have proven that blood between two ligatures on a blood vessel does not necessarily clot.

Theodore Thompson of London thinks too much calcium in a milk diet such as one would be on with Typhoid Fever is a predisposing cause to the clotting of blood, but offers no reasons why ulcers patients on a sippe diet or Tubercular patients seldom develop Thrombo-Phlebitis. Zurhelle has proven, however, that blood can clot even where it has been rendered incoagulatable by hidrudin.

Zimmerman of Northwestern University states three chief causes: diseased blood vessels, slowing of the blood stream, changes in the blood itself. He does not, however, enumerate these changes.

As stated before Haynes and Benzozera believe that increased blood platelets are important factors, and this belief is concurred in by Ebith Schembush, Balsh and Aschof.

Christenson found microscopically in the lining of the left common iliac vein adhesions and pockets which he advances as one of the causes of this side being more frequently affected than the other. He states that the pressure upon this vein by the left common iliac artery probably has some bearing.

Dr. George S. Foster of Manchester, New Hampshire, believes that trauma at childbirth is a common predisposing factor.

Dr. Aschof advances four main causes.

1. Changes in the blood plasma (decreased or increased coagulatibility).
2. Changes in the blood element (decrease or increase in the power of agglutination).
3. Changes in the blood flow (slowing and formation of the blood eddies).
4. Changes in the blood vessel walls (particularly the endothelial lining).

W. A. Lister confirms the belief of Miller that changes in the rate of the venous flow have a great deal to do with formation of Thrombo-Phlebitis. Walters agrees with Lister and Miller on this factor.

Dr. Kelbourn of Los Angeles believes that chemical irritants, bacterial infection, traumatic injury and stasis of the blood stream are important factors.

Symptoms

Symptoms of Thrombo-Phlebitis and Emboli do not provoke much discussion. In Acute Phlebitis all agree that pain, local tenderness, fever, chills, edema are the cardinal symptoms, while in chronic Phlebitis all of these same symptoms may not exist and none of them are quite as severe. In Thrombo-Phlebitis there may or may not be swelling in the parts below the Thrombus. There is, however, firmness along the course of the vessel, increased tenderness and the patient gets progressively worse for a time. The cause of the swelling, when it does exist, has stimulated a number of opinions.

Zimmerman states that Hommens, Follinger, Richert and others say that obstruction of the lymph vessels cause edema but his experiments in cutting all of the lymph vessels have not borne this out.

Coehen and others agree with Dr. Zimmerman that the lymphatics do not play any part in causing the edema.

As early as 1860 Lower ligated the veins and produced edema although later observations have not been able to corroberate this experiment. There is evidence, however, by W. A. Walters, to show that injection around the site of a vein with fifty to seventy per cent alcohol produces a severe anemia which lasts a few days only, and that barium sulphate injected into a vein produces a thrombus. This produces a severe edema and the death of the dog in a few days.

Other experiments tend to prove that if the vein is ligated and the lymphatics are all cut edema is almost sure to occur.

Terminal Symptoms

If collateral circulation is not established in time to save the tissues gangrene either dry or moist according to whether an artery or a vein is thrombosed develops. Special symptoms as embarrassment to respiration, severe shock, acute abdominal distress all depend upon the vessels affected.

Diagnosis

Is based upon both objective and subjective symptoms, the most important of which is local tenderness, pain and fever in the acute cases and varicosity of the veins, associated with mild symptoms, in chronic cases. Dr. George Brown will not make a diagnosis of Phlebitis without local tenderness. In sixty-four per cent of his cases he found this tenderness

in the calf or the lower popliteal space and in 24 per cent in the femoral area.

In fifty per cent of the cases reported at Mayo's there was edema.

If while attempting a diagnosis a history of an incessant smoker or user of alcohol or recent infectious illness, with or without operation, local trauma and a debilitating state is obtained, will help one in making a decision.

Prophylactic Treatment

The most frequently advocated, preventative treatment is abstinence from tobacco and alcohol, early and frequent motion of the limbs after operation, deep breathing exercises during any prolonged period of bed rest and avoidance of dehydration.

Treatment

Almost as many treatments have been advanced as prophylactic and curative measures as theories were advanced for the cause of Phlebitis. The simplest and most antiquated is the application of a leech in the area of the affected vessels. Two to five leeches may be used once or twice, three to five days apart. How this can help the Lord only knows, but Dr. Ternmier and others have used leeches and reported good results. They claim that the pain is immediately relieved and that the clot is in some way affected by hidudin which is in the saliva of the leech. This is supposed to prevent clot formation and to digest the clot already formed. Drs. Sulker and Boulgin report that they have used leeches and have never had an infection to follow and no increase in embolism.

Dr. St. Gueque recommends injection of two per cent animal charcoal in the vein. The motus opirandi of this treatment he does not explain. Neither does Dr. Millett who recommends histomin hypodermically.

Dr. Polak of Brooklyn treats his puerperal Phlebitis cases with quinine injections, vaccine therapy, and transfusions.

W. A. Walters prescribes with great faith thyroid extract.

Mortality

The mortality statistics are too varied to be of any value in this paper. They vary from .3 to .06 per cent.

I apologize for the long list of conflicting statistics just given, and in conclusion let me say first that while few investigators agree upon the cause the weight of evidence is in favor of changes in blood plasma, blood elements, blood vessel and rate of flow of the blood. The changes in the blood are due to either a chemical or bacteriological agent. Slowing of the blood stream is due to low blood pressure, low B.M.R., trauma, lying still in bed over a long period of time and debilitated states of any kind.

The most advocated preventative treatment is early and frequent

moving in bed, deep breathing exercise, prevention of dehydration after all operations, very limited use of tobacco and alcohol.

After Thrombo-Phlebitis has occurred complete rest in bed, elevation of body—not limbs—leeches, diathermy and x-ray are used to dissolve the clot.

Injecting materials is used to produce a thrombus or ligation above the primary one to prevent an Emboli. Also local applications of Acetyl-Beta-Methyl-Choline-Chloride with Galvanic Current is used for ulcers associated with Phlebitis.

In varico-Phlebitis the injection is the one and all important treatment unanimously agreed upon.

Chairman Moore: The paper is now open for general discussion.

The chairman would like to exercise his privilege of discussing the paper.

Chairman Moore (Asheville): I think this question of phlebitis is one that certainly interests every surgeon. One of the most distressing things that can happen to a surgeon is to operate on a perfectly simple appendectomy patient and to have him laid up from six weeks to six months, and not to know why or where or what to do for the patient. This has happened to every one of you who have done a great deal of surgery, and it is going to occur again, and any light that can be thrown on the subject as to how to prevent phlebitis is a valuable contribution.

There was an article recently in the *American Journal of Surgery* which stressed three points that seemed to be definite. There seemed to be a dozen instances of phlebitis in this series. One was deep breathing exercises. Of course, the venous return is largely influenced by the pumping action of respiration. The second is exercise of the limbs. This man has formed sort of a bicycle pedal arrangement attached to the bed and every patient is instructed to exercise his limbs a certain period each day to improve the systemic circulation. The third is administration of thyroid which stimulates circulation. Those measures are worth while if they do reduce phlebitis because unquestionably its occurrence is too frequent, and it is too disabling an injury when it does occur.

Is there any further discussion?

Dr. Davis, will you close the discussion?

Dr. R. B. Davis (Greensboro): I just want to state one more sentence in apologizing for stating so many names and figures and statistics. I felt when I entered into this subject I had a subject that I could cover in a reasonable length of time, and as I went on I found all these other physicians had been in hot water. I felt that I might as well take my medicine and get in hot water too, and it is impossible for this subject to be covered in an hour's time unless we take an entirely different attitude from what these fellows take.

If we can promote some interest in this matter and you fellows will look the literature up, you will find out some mighty good men are on both sides of the fence and some don't know what side to get on.

Chairman Moore: The next paper on the program is "The Physiological Implications of Gastric Surgery" by Dr. R. B. McKnight, of Charlotte. (Applause.)

Dr. McKnight presented his prepared paper. (Applause.)

THE PHYSIOLOGIC IMPLICATIONS OF GASTRIC SURGERY

R. B. McKnight, M.D.
Charlotte, N. C.

It is not my purpose to enter into a controversy over the medical or surgical treatment of peptic ulcer, the etiologic factors and theories involved in their production or the relationship of malignancy to gastric ulcer. I shall assume there is a definite indication for surgical intervention in a dysfunctioning stomach, and shall discuss what type of operation should be performed—or not performed—depending on certain fundamentals of gastric physiology. There are perhaps no more satisfactory results obtained in abdominal surgery than those following technically correct operations on the stomach where they are indicated, provided operation is done with the aim of restoring a normal physiology, or interfering as little as possible with the normal physiology. On this basis to a large extent rests the success or failure of gastric surgery.

Over a hundred years have passed since Alexis St. Martin became a walking laboratory as the result of a gunshot wound in the abdomen, and a subsequent gastric fistula. The observations made on him by Beaumont form the basis of our knowledge of gastric physiology today. Not a great deal was added until 1912 when Cannon and others began investigating the stomach and digestive functions by means of the Roentgen ray. Since then the roentgenologists and chemists have added much to our store of knowledge of the stomach's physiology, and have to a large extent laid the foundation for scientific surgical approach for the relief or cure of various gastric and duodenal lesions.

The nervous mechanism of the stomach is not clearly understood. It is not one of direct antagonism between the vagus and sympathetic extrinsic nerves as was once believed. The vagus was supposed to transmit motor impulses only, and the sympathetic nerves were thought to carry all the inhibitory fibres. We know now that this is not true. As a matter of fact, all the extrinsic nerves to the stomach may be severed, and in a few weeks the stomach overcomes its decreased tone and weakened peristalsis, and hunger spasms will reappear. Does not this bear out Alvarez's contention that peristalsis and motion of the gastric and intestinal

muscles are probably myogenic in origin, and that the ordinary movements of the stomach, possibly like those of the heart, are started in the muscular wall? Is there a pace-maker for gastric peristalsis comparable in a fashion to the sino-auricular node? In other words, is not the motor mechanism chiefly intrinsic?

Gastric peristalsis undoubtedly works in cycles and apparently begins as ripples near the esophageal opening on the lesser curvature and proceeds with increasing force until the middle of the stomach is reached. Here the waves can be identified fluoroscopically. It is probable that there is also a less active "pace-maker" on the greater curvature beginning about the transverse band. The former, on Alvarez's gradient theory, is the more active. During digestion the movements of the cardiac portion of the stomach are largely tonic contractions, whereby this end of the stomach forces food into the actively churning right portion by continuous gentle pressure. If the peristaltic waves are sufficiently strong to pass over the pyloric canal, there is relaxation of the sphincter, and a stream of gastric contents is discharged into the duodenum. This accumulates to form a cap which is later emptied by its own contractions. This action seems to be limited to the lesser curvature, the greater curvature being involved but slightly until the pyloric area is reached. Since about 80 per cent of all gastric symptoms are from trouble with the motor apparatus, then it follows that the larger portion of the stomach is relatively "physiologically silent" as to symptoms. This may have some bearing on the usually less severe symptoms associated with ulcers well up on the greater curvature, and perhaps to the greater frequency of malignancies encountered there.

Another point in the emptying of the stomach which may have some surgical significance is what is termed the ileogastric reflex. When the ileum discharges its contents through the ileocecal valve, the stomach at once begins to empty. When food enters the stomach, a movement of the lower ileum occurs. This phenomenon must, of course, have a neurological control. Food in the stomach initiates active motion throughout the intestines, both large and small. It is also likely that diseased conditions in the cecal and appendiceal regions cause a spasm of the cecal sphincter, and probably of the pylorus also. It would seem obvious that to perform a physiologically complete operation on a dysfunctioning stomach that attention should also be paid to any pathologic or anatomical lesions in the right lower abdominal quadrant.

The chemical control of the pyloric sphincter is not entirely tenable. One must hesitate to say that excessive acidity on the stomach side causes relaxation of the sphincter, as was formerly thought—there are those who believe it may actually cause spasm—and when the normal alkaline contents of the duodenum become acid the sphincter contracts. This so-called acid control does not explain cases where there is an anacidity in the stomach, nor does it explain the rapid emptying of water and albuminous

material which seem to flow quickly along the lesser curvature to the duodenum. Why are such substances so rapidly discharged into the duodenum? Why is the pylorus apparently open to receive this material?

It has been shown that at the end of normal gastric digestion, when strongly acid gastric juice has accumulated in an empty stomach, the pylorus opens with an influx of duodenal contents, thereby reducing the acidity of the stomach fluids. It must be remembered that the alkalinity of the duodenal contents is not due to bile, but to the alkaline pancreatic secretion. As a matter of fact, bile is likely not found so often as supposed in the stomach contents. Therefore, pyloric spasm or obstruction which prevents this regurgitation tends to favor ulcer formation. I do not contend the issue as to whether or not the high acidity is the cause or result of the ulcer—it is probably the latter—but to state the fact that they are associated in the majority of cases, and to refer a little later to the surgical significance. Some investigators think the acid theory must be discarded. They believe mechanical conditions in the cap are the determining factors regardless of the reaction of the duodenal or gastric contents. When the cap is full the sphincter is closed, and when it empties the sphincter relaxes.

In addition to the consideration of the motor function of the stomach, the physiology of its secretory process is of utmost importance to the surgeon. The gastric glands are the cardiac, fundic, and pyloric. The cardiac glands are of no importance so far as we know. It may be that the pyloric glands have some surgical significance, but they do not secrete pepsin or hydrochloric acid. Brunner's glands are found in the pyloric area of the stomach; what their function is, or whether or not they have any surgical importance, is unknown. It is the fundic glands with which we are chiefly concerned. It is evident that the large central cells secrete pepsinogen, and the parietal cells are the source of hydrochloric acid. The chemistry of the secretion of hydrochloric acid is not clear; it does not seem likely that a cell can secrete hydrochloric acid in a concentration of 0.5 per cent and live! Probably it is secreted as ammonium chloride. In the presence of an ulcer are the cells the source of more hydrochloric acid, either by increased secretion or by higher concentration? It is probably a phenomenon of hypersecretion. This has a definite surgical significance, because delayed emptying time may result in hyperacidity. The "pain of hyperacidity" is caused chiefly by abnormal motor activity of the stomach.

So much, briefly, for the physiology of the stomach which, indeed, could be elaborated considerably. Just how can this knowledge be applied in order to secure satisfactory surgical results?

The routine use of gastroenterostomy for all stomach and duodenal lesion is both illogical and unphysiologic. Evidence is accumulating that cases with excessively high acids had best be handled by methods other than gastroenterostomy, because of the increased frequency of marginal

or gastro-jejunal ulcers. When there is obstruction due to induration, cicatricial contractures or other pathologic reactions, gastroenterostomy frequently gives nothing short of brilliant results. Delayed emptying time is unfavorable for ulcers, and an advantage of this operation is to shorten the emptying time of the stomach. The claim has been advanced that it is an unphysiologic and unjustifiable operation because duodenal contents are admitted to the stomach. The fact that this is a normal procedure in gastric digestion, securing the desired reduction of the increased acid value, justifies gastroenterostomy as a sound physiologic maneuver. It does restore the regurgitation of duodenal contents which was prevented by the obstruction. As a matter of fact, if it does not permit an influx of alkaline duodenal contents, then it is indeed unjustified, and is not founded on a sound physiologic basis. An illustration is the Roux type of gastroenterostomy where the duodenal contents do not bathe the anastomotic line in the stomach. When the Roux operation is done on dogs they almost always develop a peptic ulcer. If there is no gross mechanical obstruction at the pylorus, then gastroenterostomy is not likely to give the patient relief, because the gastric chyme still makes its exit through the pylorus, and not through the gastrointestinal fistula. Gravity probably plays a minor role in the stomach's emptying, and the idea that the stoma should be placed in the most dependent portion of the stomach is not necessarily physiologically sound. Cannon and Blake suggest that the stoma be as large as possible, and placed near the pylorus. This is based on a more tenable physiology supported by their experimental investigations.

Cholecystogastrostomy has been advocated for the cure of peptic ulcer. This is not physiologically sound, because (1) bile is only slightly alkaline, and is frequently entirely neutral, (2) if the common bile duct is patent, then the discharge of bile into the stomach is negligible, and (3) the effect of the gastric contents on the duodenum may lead the way to an ascending cholangitis, although such is more likely to occur following cholecystoduodenostomy. This operation should be reserved for malignant occlusion of the common bile duct, so that the dammed back bile may be shunted into the gastrointestinal tract. It has no place in the surgical therapy of ulcer.

V-shaped or sleeve resections of the stomach are not founded on a physiological basis, unless, perhaps, the wide end of the V is placed on the greater curvature. It is obvious that the removal of a segment through the middle of the stomach must be followed by disastrous functional results since there is an interruption in the continuity of the peristaltic waves spreading down the lesser curvature to the pylorus. The acid bearing portion of the stomach is, of course, greatly reduced, but there are other ways of securing this result surgically without an upset in the motor mechanism. Freer drainage or more rapid emptying of the stomach is certainly not obtained; just the reverse can be ex-

pected. Since sleeve resection of the stomach is attended by almost invariably poor functional results, it has been largley abandoned by those doing gastric surgery.

Pyloroplasty, and there are several excellent methods, is frequently a most satisfactory operation functionally. Given a small ulcer on the anterior surface of the duodenum with little scarring or other obstructing pathology, but which reflexly is producing gastric retention, and which has resisted an adequate medical regime, such a lesion is ideal for excision, and a plastic operation on the pylorus. It enlarges the outlet, prevents further reflex narrowing as the sphincter is divided, and permits free drainage into the duodenum. There is no interference with the line of peristalsis on the lesser curvature, and the anastamosis is continually bathed in alkaline secretions.

A small ulcer on the lesser curvature may be excised, and the area sutured, and covered over with a tag of gastrohepatic omentum without any serious interference with the peristaltic waves running down this area. The high acidity will in most cases be reduced. Larger ulcers or ulcers near the pylorus had best be treated with gastric resection, and here some interesting physiological problems arise. It is physiologically indicated to secure reduction of excessive acidity, and this can be accomplished by removing part of the acid-bearing portion of the stomach, particularly would this be indicated in considering the possibility of malignancy in the larger ulcers. At the same time it is desirable to preserve the sweep of the lesser curvature into the bowel, and to promote entirely free drainage, and prompt emptying of the stomach. The ideal operation is one which makes a direct anastamosis between the distal end of the stomach, and the proximal end of the duodenum. The Billroth 1 operation, with or without various modifications depending on conditions influencing the judgment of the surgeon, is an excellent operation, and gives nice functional results. It fulfills practically all the physiological requirements. In my hands this operation has proved most satisfactory, and I have several patients who have remained clinically well following this type of resection. It is important that such a resection not be done if there is danger of too much tension on the suture line. In such cases a Polya or Balfour-Polya type of resection and anastamosis gives excellent results. Here the duodenum is closed, the stomach resected, ananastamosed to a loop of jejunum. In such a procedure a good quantity of acid-bearing portion of the stomach is removed, and good drainage is instituted, thus lessening the hyperacidity, and in addition permitting the suture lines to be bathed in an alkaline secretion. Not infrequently one encounters cases with massive induration about the pylorus in which any type of primary resection is inadvisable or even impossible. Here a primary gastroenterostomy may be subsequently safely converted into a Billroth 2 by performing resection of the involved area distal to the gastroenterostomy. At the second operation the swelling and induration

will likely have markedly subsided, making resection and anastamosis relatively easy. Of course, the primary gastroenterostomy should be placed more proximally on the stomach. Fair functional results follow this two-stage procedure. The good results obtained in properly performed gastric resections lead to the surmise as to the actual value of a pyloric sphincter, since in these operations, as in pyloroplasty and pylorectomy, there is entirely free drainage.

Hughson of Johns Hopkins has recently divided the vagus nerve just as it enters the stomach, and observed that the stomach emptied more rapidly. He also noticed that the same type of injury which would probably have caused retention did not do so when the vagus, either alone or with the sympathetics, was cut. After pyloric excision such an effect was not obtained. This seems to indicate that the slow emptying time was due to pyloric spasm. A patient with an apparent idiopathic pylorospasm secured a satisfactory result. It must be admitted, however, that we do not understand clearly the innervation of the stomach.

In surgery of the stomach for malignancy the physiological aspects are not as important as they are in other conditions. Like malignancy elsewhere, especially of the breast, the more radical the procedure, the better chance of cure there is—even though it may be slight at best, the chief aim here is to eradicate as thoroughly as possible the malignant growth, and hope that metastasis has not occurred. Yet, even in these cases, it is frequently possible to perform technically such an operation that will permit the stomach to function in a satisfactory manner, and at least give the patient relief for a variable length of time. In non-resectable cases with complete or partial malignant obstruction at the pyloric outlet, simple gastroenterostomy will permit a more rapid emptying of the stomach, and give the patient some months of comfort before the inevitable end.

Chairman Moore: The discussion will be opened by Dr. Russell Lyday.

Dr. Russell Lylay (Greensboro): Dr. McKnight has considered in a very practical manner the normal physiological and pathological side of the stomach. He has at the same time discussed the various types of operative procedures that interfered less with normal physiology, and at the same time lowered the high acid values of the stomach. I know of no organ of the body that has lent itself more satisfactorily to study by an experimental physiologist than has the stomach. It has been the result of such investigation, beginning with Beaumont a hundred years ago on down to the present day, experimental physiology such as that done by Landeau and Wolfe and others, that recent developments in gastric surgery have taken place.

When one considers surgery of the stomach, especially the large problems, one thinks of gastric and duodenal ulceration, particularly

those of the recurring type. Since we know that hyperacidity itself of the stomach is so important in the development of ulceration of the stomach, and the duodenum it is not only necessary that we select a certain type of operation for the individual, but we must be ready to be reëducated in the patient's habits so he will discontinue the practice of those habits that contribute to hyperacidity, and high excessive stimulation of nerves, and as a subsequent complication, recurrence of ulcer.

I have two or three slides here that I thought might emphasize just what Dr. McKnight has said with regard to the physiology of the stomach.

(Slide.) This first schematic diagram possibly shows the fungus extending higher than would normally be the case. You can see the large area of the stomach where the secretion of hydrochloric acid and pepsin takes place. This is more resistant to ulcer formation than are those areas just below where the acid flows over that portion of the lesser curvature and pylorus, and the first part of the duodenum.

(Slide.) This is also a drawing taken from Ortor showing a large series of cases. This is the most common side for gastric and duodenum ulcers, and as you see pretty well, goes with that part that is more susceptible to this acid condition.

(Slide.) Here an experimental operation has been performed. This is one by Matthews in which he disconnected the duodenum from the stomach and bound the duodenum to the pylorus. The interesting fact about this was that when he did not remove this pyloric muscle about a hundred per cent of those animals develpoed ulcers near the anastomosis. If he removed this pyloric thing in the operation a much lower per cent of those animals developed ulcer.

(Slide.) This next slide is from Steinberg, and another man in which they formed these gastric pouches, and brought the terminal up to the pouch. Even though they used a very small pouch here an ulcer developed very quickly and perforated, showing, of course, the marked susceptibility of the intestinal tract as one descends the alimentary canal.

(Slide.) This, of course, is a result of much animal experimentation and clinical work. This is a type described by von Hogner in these diagrams of different problems of recurring ulcer cases. This embodies three features here that are of utmost importance in preventing further recurrence of ulceration. First, it takes off a portion of the acid-bearing part of the stomach. Next, it gives a very wide, free opening. There will be no gastric retention. Third, it makes that part of the intestinal tract which is the duodenum less susceptible to ulceration from the irritation of this acidity. (Applause.)

Chairman Moore: The paper is now open for general discussion. Is there any further discussion? If not, I will ask Dr. McKnight to close the discussion.

Dr. R. B. McKnight (Charlotte): Mr. President, I would just like to read a paragraph here. It reads as follows: "It is not my purpose to enter into a controversy over the medical or surgical treatment of peptic ulcer, the etiologic factors and theories involved in their production, or the relationship of malignancy to gastric ulcer. I shall assume there is a definite indication for surgical intervention in a dysfunctioning stomach, and shall discuss what type of operation should be performed—or not performed—depending on certain fundamentals of gastric physiology. There are perhaps no more satisfactory results obtained in abdominal surgery than those following technically correct operations on the stomach where they are indicated, provided operation is done with the aim of restoring a normal physiology, or interfering as little as possible with the normal physiology. On this basis to a large extent rests the success or failure of gastric surgery."

Chairman Moore: I am going to suggest that we take about three or four minutes for a recess. During this recess the Committee on Nominations might begin to function.

A short recess was taken at 3:45 p.m.

Chairman Moore: The section will now come to order, and we will have the next paper on the program which is by Dr. Thomas D. Sparrow, of Charlotte, on "The Tube Pedicle Skin Graft, its Usefulness to the General Surgeon." (Applause.)

Dr. Sparrow presented his prepared paper. (Applause.)

THE TUBE PEDICLE SKIN GRAFT ITS USEFULNESS TO THE GENERAL SURGEON

Thos. D. Sparrow, M.D.
Charlotte, N. C.

The tube pedicle method of skin grafting, devised and applied by Filatoff[1] and Gillies[2] twenty years ago, is at present an accepted and generally used procedure by plastic surgeons. The technique is so simple, and the method so effectual that the general surgeon, who is infrequently called upon to perform plastic operations, can utilize it with confidence and success. It is rather remarkable that comparatively few general surgeons use this method of skin grafting. They choose to refer the patient with deforming scars and contractures to the plastic or orthopedic surgeon, if one is available, or they attempt to improve the deformity by utilizing some less effective method, or they allow the patient to go untreated. Skin grafting is often a tedious and time consuming procedure, and its ultimate success demands the absolute coöperation of the patient and the surgeon In many communities, the general surgeon is the only one to whom the patient can look for a correction of his deformity, and unless the surgeon is ready and willing to perform a re-

constructive or plastic operation, the patient is doomed to exist a hopeless cripple, unable to support himself or his family. Because of this fact, and because of its technical simplicity, its effectiveness and its extraordinary viability, the tube or pedicle flap method of skin graftnig is presented as a practical procedure for the general surgeon.

Gillies defined the tube pedicle flap as a type of delayed flap in the form of a tube in which the long edges are sewed together.

The purposes of thus rolling the skin into a tube are:

1. To create a blood supply longitudinal to the axis which is sufficient to maintain the viability of the tube without the aid of any transverse blood supply.
2. To prevent the formation of granulation tissue during this period of readjusting the blood supply and
3. To have the skin in a workable form in which it may be easily transplanted to distant regions.

Considerable judgment should be exercised in choosing the region from which the skin is to be taken. An area should be selected in which the skin is freely moveable to assure the closure of the area left denuded. Certain areas are particularly adaptable as the oblique inguinal region; the acromeopectoral area, and the outer side of the thigh. It is better not to cross the midline of the body because few blood vessels traverse this line. However, at times, this may be necessary. (Figure 2).

The tube or pedicle flap is formed by making two parallel incisions through the skin and subcutaneous fat. Between these parallel incisions the skin and fat are freed, leaving the extremities attached. The freed skin is then rolled in a tube with the subcutaneous fat in the center, and the edges are carefully approximated and retained with sutures. Sufficient subcutaneous fat must be included in the tube to insure its flexibility, and to meet the cosmetic requirements of the area to be grafted. The denuded area thus left by the formation of the pedicle is carefully closed by undermining the skin edges, and suturing them under the tube. It is well, if possible, to select an area in which too much tension will not be placed on this suture line. (Figure 8.)

It is necessary to consider the size of the tube that is to be formed. It is safe to make a tube eight inches long and three inches in diameter. The ratio of the length of the tube to the diameter should be approximately two and one-half to one. (Figure 2.) Since its viability is dependent on its blood supply from the attached extremities, the tube must not be made too long or too thin. (Figure 9.) If greater length is needed, the pedicle may be extended after several weeks. Gillies has suggested that a pattern of the area to be grafted should be made and the tube should be constructed to conform with the pattern. It may be forked, branched, straight, or crescentic.

After three weeks, one end of the tube may be detached and planted closer to the area to be grafted. (Figure 3.) After three more weeks

the opposite end may be freed and moved the length of the tube and planted. (Figure 4.) Thus, in alternating the replanting of the ends, the tube may be walked any distance. (Figure 5 and Figure 10.) In moving the attachments of the pedicle, it is useless to attempt to transport any skin not included in the pedicle. This skin invariably undergoes necrosis and is wasted. The triangular denuded areas, which are left after the removal of the extremity of the tube, are closed by undermining the surrounding skin and closing with sutures. To expedite matters, the end, or better the middle of the tube, may be planted on the wrist or arm, and it may be transported to any area within reach of the arm. When the site of grafting is reached, the tube is split along its seam and the scar removed. The tube is then unrolled and spread over the area to be grafted, and its edges are sutured to the healthy skin surrounding the wound. If the tube was properly constructed and carefully patterned the edges should be approximated easily and without tension. (Figure 5.) A firm dressing is applied. The following case illustrates the successful use of the tube pedicle graft. (Figures 1-6.)

Case 1. P.K. White male, twenty-two years of age. He states that when a child of three years of age, he was severely burned on the right arm, shoulder, axilla, chest, and back. Healing was very slow, and there was a resulting contracture of the right shoulder. Several operations were performed in an attempt to restore the use of his arm, but after each operation, his condition was unimproved. The scar has continued to contract until he is, at present, unable to use his right shoulder. Several months ago an ulcer appeared at the mid-portion of the axillary scar. This became infected and caused him severe pain and fever. Soon afterwards a fungating mass, about the size of a half dollar, appeared along the margins of the ulcer, and it began to discharge a bloody serum. He is unable to work and provide a living for his wife and infant son.

Examination revealed extensive scarring over the right side of the chest, extending from the clavicle to three centimeters below the costal margins. This scarring included the right shoulder, the arm, axilla, and right side of the back. The right breast is almost obliterated by the scar, and the nipple is pulled down and towards the mid-axillary line. The right arm can be lifted but a short distance from the chest wall. Over the mid-axillary portion of the scar, there is a fungating, ulcerating mass about the size of a half dollar.

Under general anesthesia the fungating mass was widely excised. A Z flap closure was attempted. Sufficient skin could not be obtained to cover the defect.

The pathological report on the ulcerating mass was "squamous cell carcinoma with deep infiltrative extensions. The degree of malignancy is relatively low, as there is very little anaplasia, and there are degenerative changes with calcarious deposits, and a heavy basal reactive zone."

A tube pedicle graft was formed from the lumbar region of the back

and, by stages, carried to the axilla. Five months and fifteen days after the initial operation, he was able to return to work. He has remained perfectly well since with perfect function of his arm and shoulder.

The chief disadvantage of this method is the length of time necessary to complete the procedure. An interval of three weeks between each step is necessary to insure the blood supply. Thus, from six weeks to several months are required to complete the grafting. The economic situation must be considered. Hospitalization is necessary for the operative procedures, and the patient is frequently unable to work for a long period of time. Absolute coöperation is necessary, and the patient's morale must be maintained.

Sir Harold Gillies finds the chief advantages of this mode of skin grafting are:

1. The readiness with which large quantities of skin may be transplanted from a distance. It is particularly useful where no massive, direct flaps are available.

2. Its flexibility allows it to be twisted and turned in the most liberal manner without causing anxiety as to its viability.

3. It lends itself to temporary attachment through an intermediate host, as the arm, and thus can be transported safely a great distance.

To these we add a fourth advantage; that is, its extraordinary ability to grow in the most unfavorable surroundings, and in an environment that would preclude the use of any other grafting method.

In the following case (Figures 7-11), an area of bone was exposed for a long length of time. No granulations were present for implanting Thierch or Revertin grafts, and it was unlikely that a split or whole thickness graft would grow under such circumstances.

Case 11. J. H., White male sixty-five years of age. He states that about fifteen years ago a small nodule appeared on his right cheek just below the external canthus of his eye. It slowly increased in size up until one year ago. At that time he consulted a cancer "quack," who treated the area with a paste. Following these treatments, an ulcer appeared which rapidly increased in size, and invaded the lower lid of his eye. He then consulted a physician who performed a biopsy, and found the growth was an epithelioma. He was treated with radium until the growth was entirely removed.

Examination showed an ulcerated area about two and one-half centimeters in diameter just below the outer canthus of the right eye, and involving the outer half of the lower lid. The base of the ulcer was formed by the completely denuded malar bone. The right eye was very red, and edematous, and there was a marked exophthalmus. There was an ectropion of the inner half of the lower lid.

A tube-pedicle graft was formed over the right neck and chest. After three weeks the lower terminus of the tube was transplanted over the denuded area. The blood supply was defective and the tube sloughed

at its mid-portion. The gangrenous portion of the tube was resected and the viable half of the tube was "walked" in stages behind the ear to the site of implantation. It was necessary to remove the eye because of glaucoma. Nine months after the first operation the area was completely covered. The patient was advised to have further operations on the lower lid in order that an artificial eye might be worn. He was perfectly satisfied with the results, and refused further operation.

Very few descriptions of the method of planting the end of the tube that must be transported can be found. Fortunately the tube pedicle has extraordinary viability, and will grow even though attached in a very careless manner. The method used in planting the end of the tube is relatively unimportant if the site of implantation happens to be on a covered surface, but if the tube must be "walked" across exposed areas, its footsteps, so to speak, are often marked by ugly and disfiguring scars.

The method of implantation to be described utilizes a triangualr flap of skin in such a manner that it not only simplifies the implantation, but largely obviates the scar formation. I have chosen to call it the borrowed flap method because the triangular skin flap used in attaching the tube is returned to its original position when the tube is again moved.

An incision is made along the seam of the freed end of the tube for a distance of two to four centimeters. The length of this incision must vary with the diameter of the tube. The end of the tube is then spread as wide as this incision will allow, leaving a triangular denuded surface (Figure 12, Number 3). At the site selected for the implantation of the tube, an angular incision is made through the skin and subcutaneous tissue (Figure 12, Number 2). Each side of the incision should be from two to four centimeters in length to correspond with the length of the incision along the seam of the tube. The triangular area of skin thus formed is dissected free, leaving the base of the triangle attached. The triangular flap is then sewed into the opened end of the tube into which it fits accurately (Figure 12, Numbers 3 and 4). The remaining free edges of the tube, and the skin along the triangular incision are approximated by sutures (Figure 12, Number 5). This makes a very satisfactory implantation (Figure 13). When the tube is to be moved again, it is freed by opening the old incisions. The triangular flap that was borrowed is again freed, and is returned to its original bed (Figure 14). The pedicle tube has the same triangular opening in its free end which is ready for implantation in a new position. There are occasions when sloughing occurs at the point of implantation of a tube. This may be due to careless or inadequate approximation of skin edges. More frequently it is the result of the poor blood supply of the tube, or of the area chosen for implanation. The borrowed flap offers a wider surface of skin attachment, and it will maintain its integrity in

the presence of a slough. At times it remains the only source of blood supply for the tube, and under such circumstances it has always proven adequate.

Summary:

1. The tube pedicle skin graft is an effective and simple means of correcting many deformities, the result of contracture of scar tissue.

2. The general surgeon should use this method of skin grafting more frequently.

3. The tube pedicle graft has extraordinary viability, and will successfully cover areas under circumstances that would preclude the use of any other method of grafting.

4. A new technique of implanting the tube pedicle is presented which materially aids in successfully planting the tube, particularly in areas of relatively poor blood supply, and it leaves a minimum amount of disfiguring scar.

BIBLIOGRAPHY

[1] Filatoff, W., Plastie a tige ronde. Westnik. Westnik Oftalmol., 1917, Avril, Mai, Nos. 4, 5.

Idem., Operations plastiques a tige ronde ambulante. Presse med. 1923, December 19, p. 1061.

[2] Gillies, H. D., Plastic surgery of facial burns. Surg., Gyneco'ogy and Obstetrica, 30-121, 1920.

Idem., Experience with tube pedicle flaps. Surg., Gynecology and Obstetrics, 60-291, 1935.

FIG. 1
CASE No. 1—Marked contracture of shoulder joint from scar following burn. There is a malignant ulcer in the scar.

Fig. 2—A tube pedicle graft prepared from the skin of the lumbar region of the back.

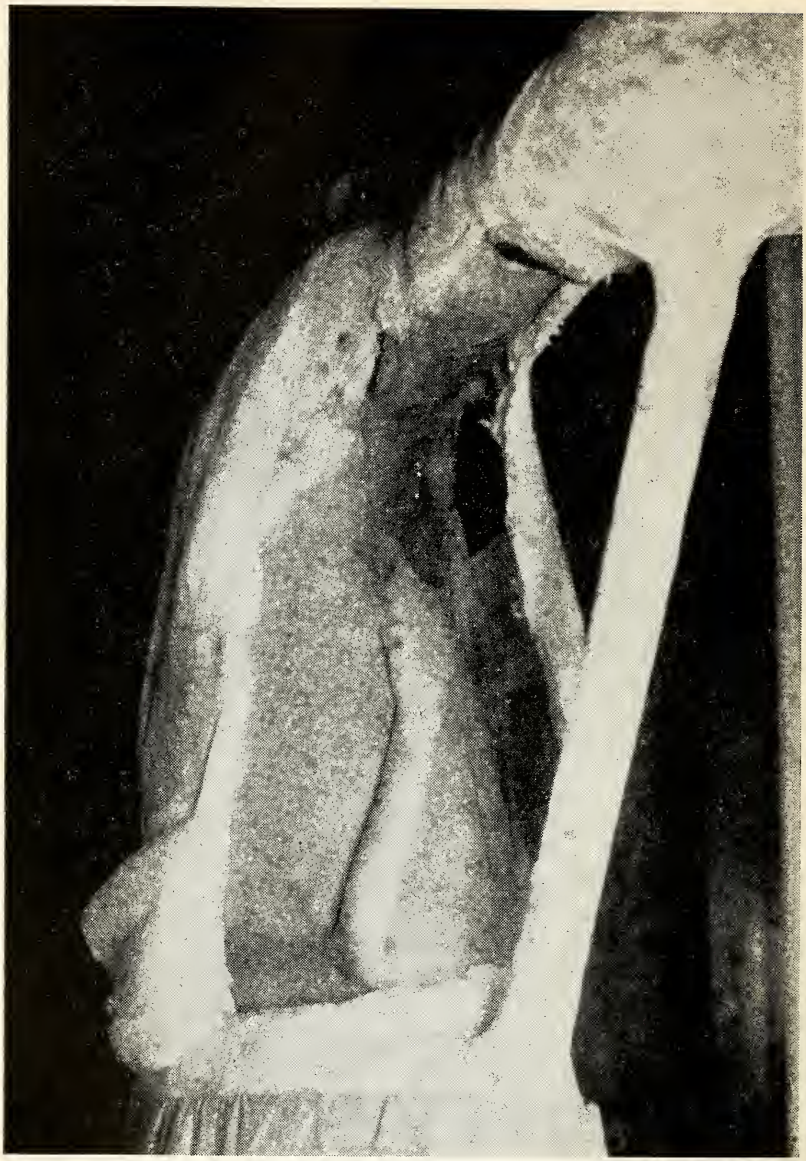


FIG. 3—The distal end of the tube pedicle graft transplanted to the lower margin of the denuded area in the axilla.

Fig. 4—The proximal end of the graft advanced in the axilla. Note the folding of the tube.

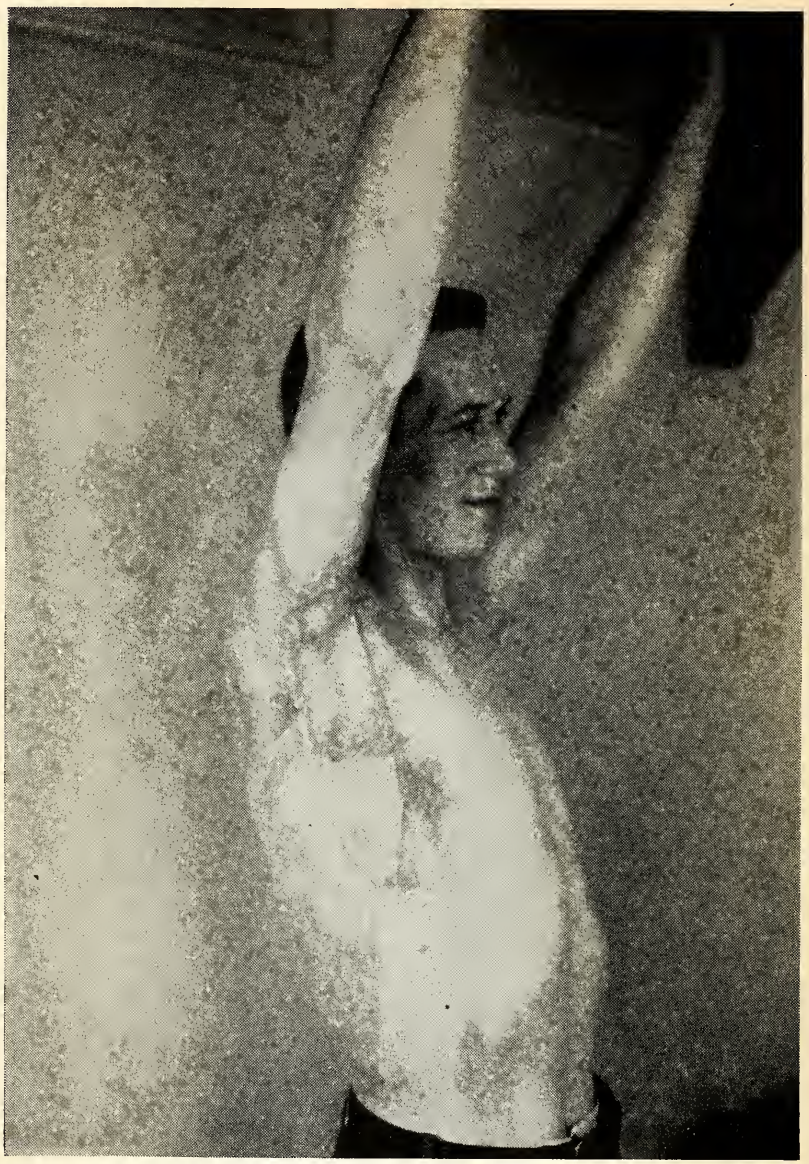


FIG. 5—The tube pedicle graft opened and fitted over the denuded area.

FIG. 6—The completed operation. Compare with Figure 1.

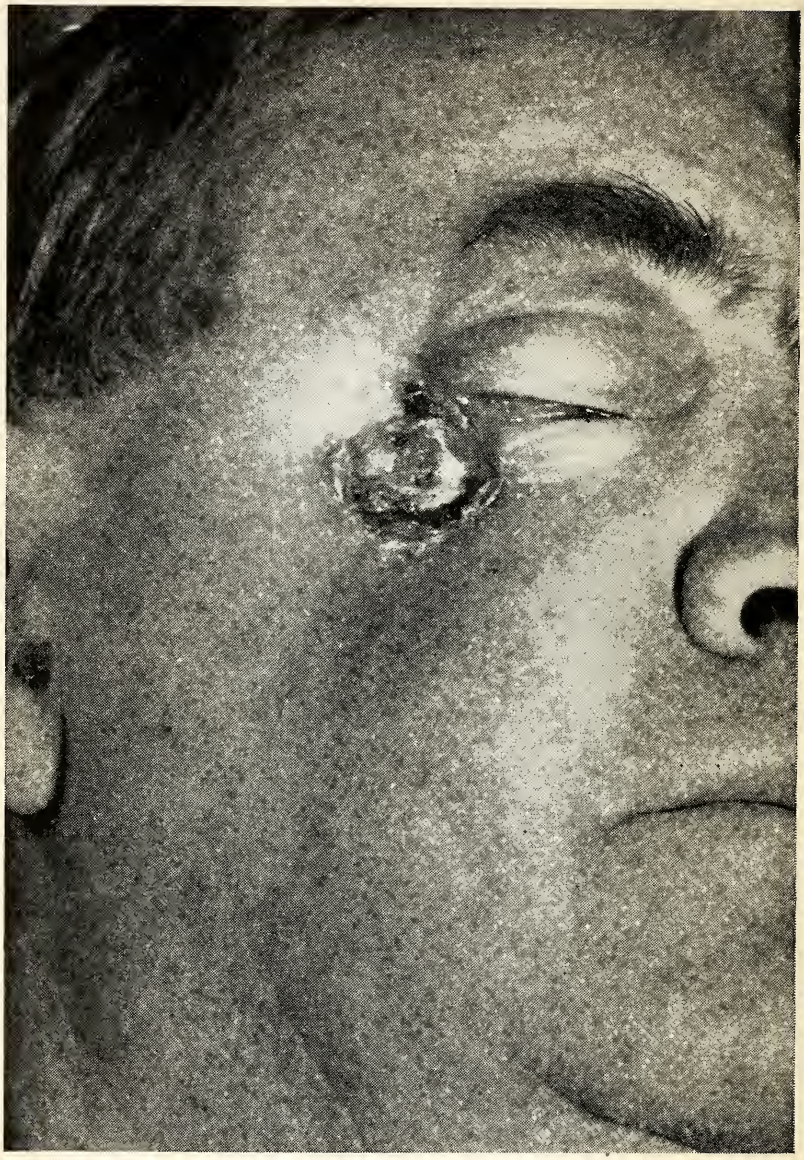


FIG. 7

CASE No. 2—Ulcerated area over right cheek involving the lower lid, the result of the removal of an epithelioma. The exposed malar bone forms the base of the ulcer.

Fig. 8—Tube pedicle prepared for grafting.

FIG. 9—Gangrene of half of a tube pedicle graft, the result of faulty technique in forming the tube.

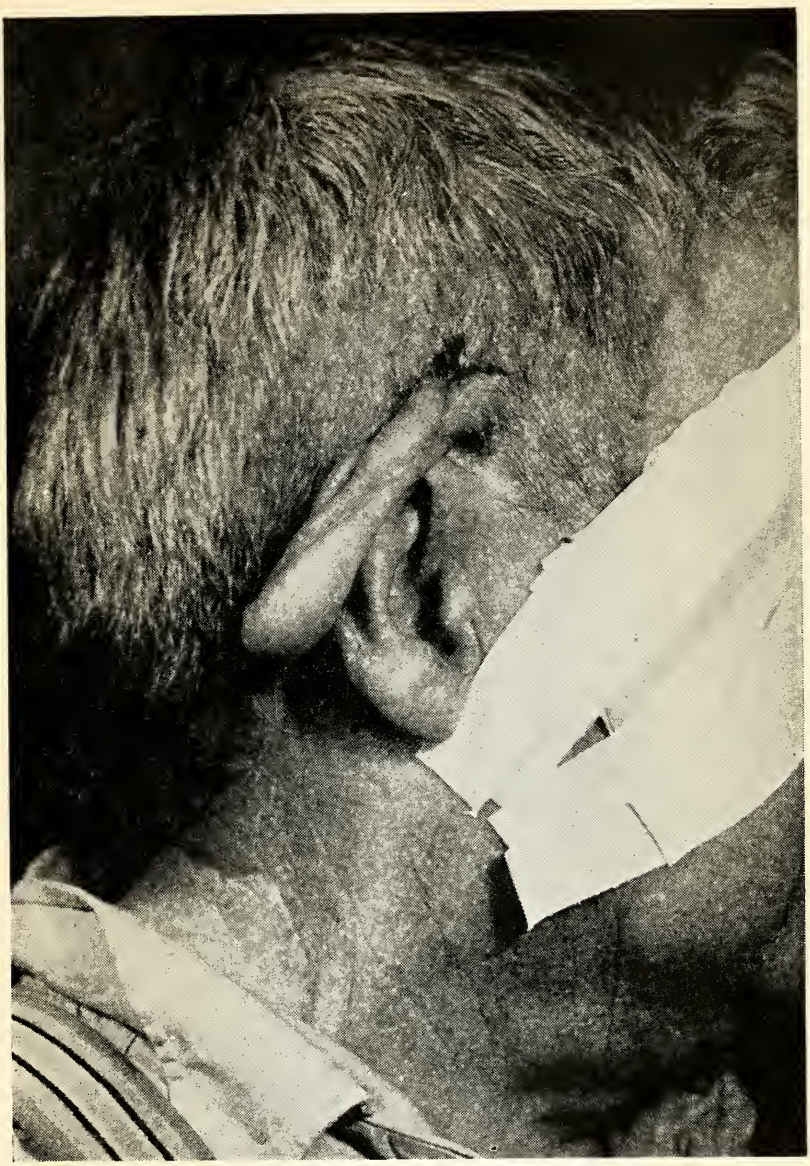


Fig. 10—The viable half of the tube is being "walked" behind the ear to the site of implantation.

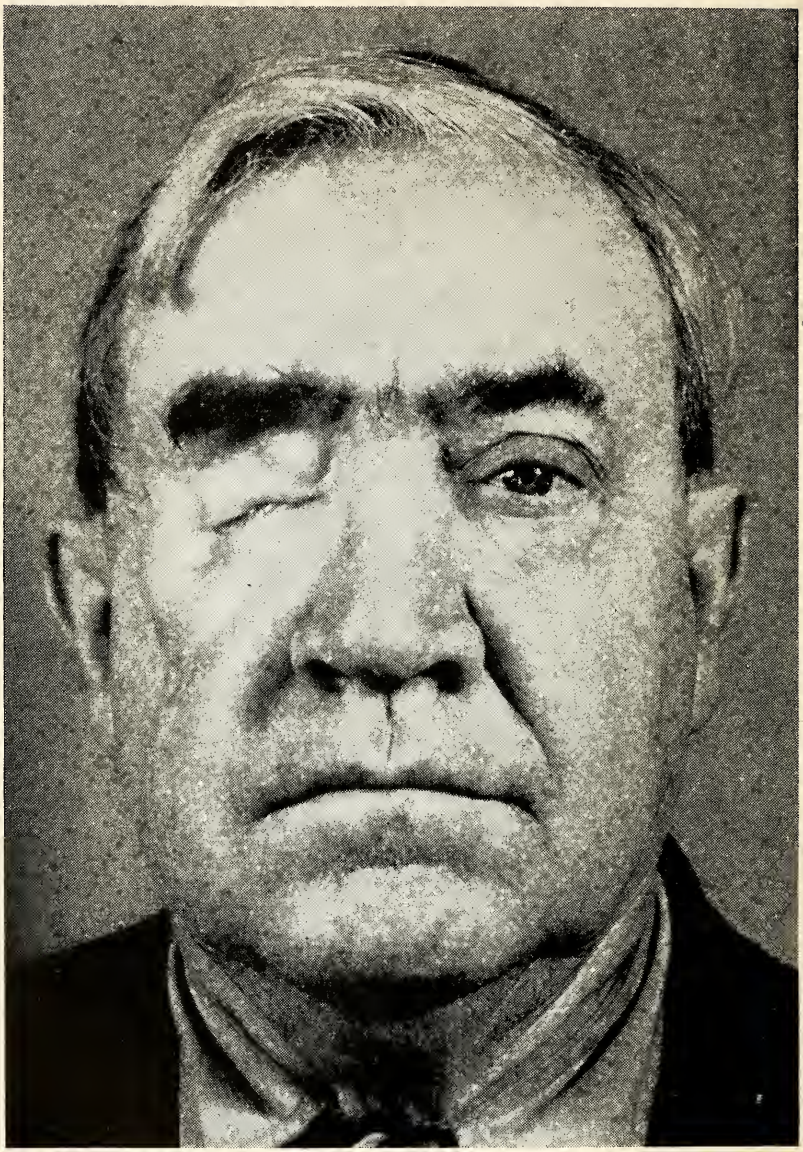


FIG. 11—The denuded area successfully covered with skin. The patient refused to have further plastic work done on the lower lid.

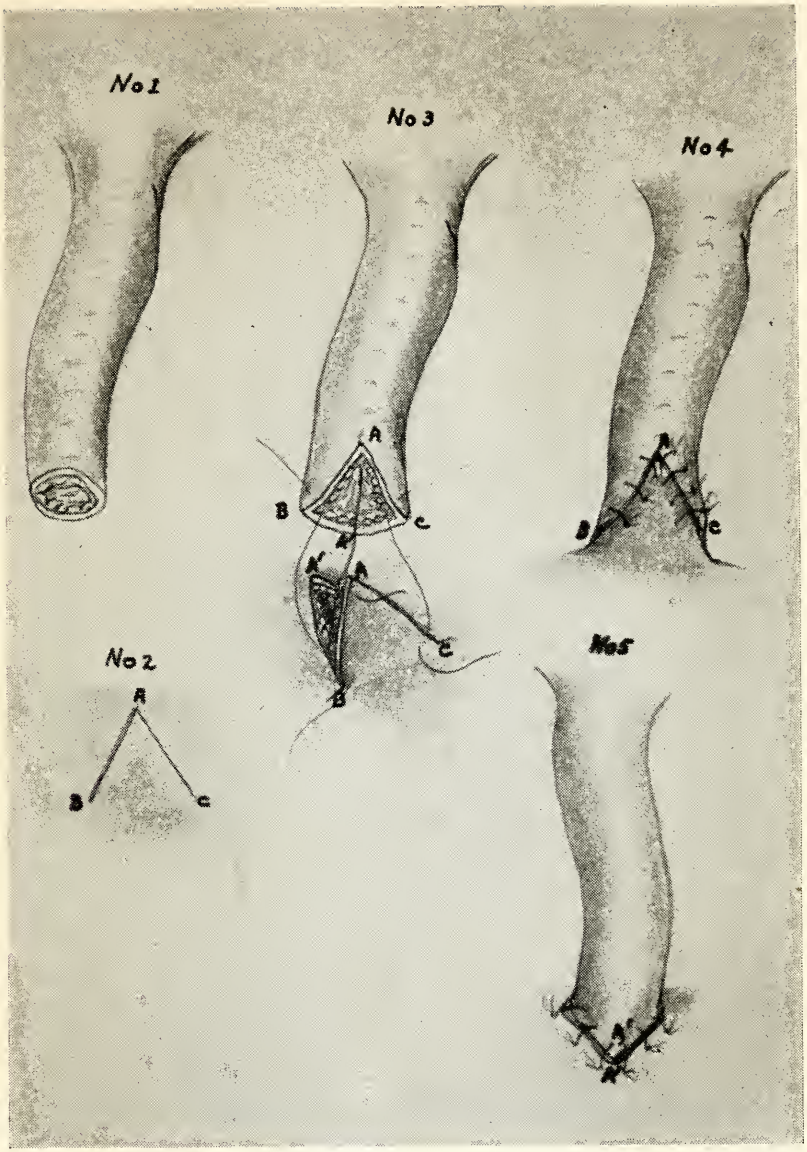


Fig. 12—The borrowed flap method of implanting tube pedicle skin grafts.
No. 1. End of tube pedicle freed for implanting.
No. 2. Triangular incision at the site of implantation.
No. 3. Opened end of tube pedicle ready to receive the borrowed flap.
No. 4. The borrowed flap sewed into the opened end of the tube.
No. 5. Posterior view showing the edges of the tube sewed along the angular skin incision.

FIG. 13—The borrowed flap attached to a tube pedicle graft at the site of implantation. The tube was formed on the chest wall. This illustrates its third implantation.

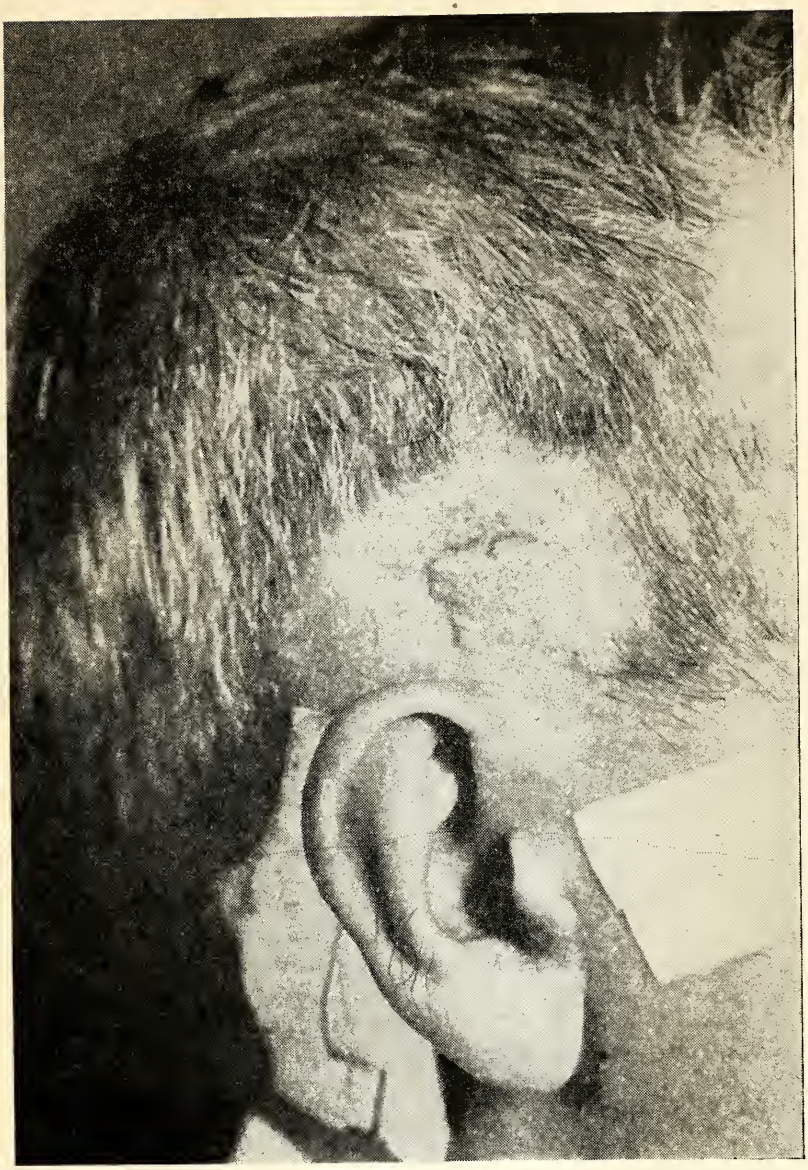


Fig. 14—The slight scarring that remains after the borrowed flap is returned.

Chairman Moore: The discussion will be opened by Dr. Jones.

Dr. O. Hunter Jones (Charlotte): Mr. Chairman and members of the Section: It is a great pleasure indeed to hear Dr. Sparrow and to see his most interesting cases and hear of his unique method of implanting this tube during the course of transplantation. Ever since Sir Thomas Jewell described the method it has been an inestimable boon to surgeons. I think Dr. Sparrow's message to the general surgeon is a most important one. I have been very much interested in the use of the method for several years and cannot add anything to Dr. Sparrow's presentation of the technique and discussion of the use of the tube except to say that frequently the problem arises as to whether one should use a sliding flap or whether one should tube the flap and thus transplant the skin.

You can use a sliding flap and it seems to me that often is preferable as it is more effort to transplant the flap to the opposite limb or to an extremity without inhibition of the tube-pedicle, and in so doing encountering a good deal of infection and delay in healing. These tubes, being a form of delayed skin transplantation, carry with them a subcutaneous tissue of tremendous value in covering certain defects. I want to show you some slides of my own.

(Slide) Here is a seven-year-old boy with a web that you see there. He had a tube flap operated by the same method which Dr. Sparrow has so clearly described and subsequently transplanted to his palm in a series of graded procedures, turned back and forth and so on and used to form his palm. In this particular case this Douglas skin transplantation is ideal. You cannot use a free graft because you have not any fat. If you put it on the muscle you are going to get contraction going on underneath. If you have got skin fat on the palm of your hand you can take the palm and you can leave fat and still put three full fingers square and get a good functioning part. If you have not got it you cannot do that.

(Slide) Here is a medical student who caught his hand in an ice machine and completely destroyed the palmar aspect of the third finger. You can see the scar here. He insisted on having the bad portion of the finger put back and they did it, telling him at the time probably he would be unable to use it. The slough extended down to and involved the tendon, chiefly the flexor tendons, but he insisted upon having this done. The scar that resulted prevented flexion.

We raised a tube flap on his abdominal wall transplanting it to the finger as you see here with this eventual result after that tube had been completely severed.

(Slide) His finger looks like this. We have since taken out some of the fat but he has good flexion and extension of the finger and the tendon moves perfectly freely underneath the fat there on that transplanted skin. It seems to me that these two flaps may be of very definite value.

(Slide) Here is a case of a girl who was very ill in her second year.

At the age of thirteen she had a burned neck. She had a web here and we raised a tube on her back which was subsequently transplanted. Here is a tube on her back worked around to her neck by a method shown in the next slide.

(Slide) Eventually this burn left her with a pretty well formed chin, building up that chin in some measure by a considerable amount of fat which was left from the subcutaneous part of the slit. This view shows her from the front and shows how it changed her entire appearance which, during her development, was a great source of satisfaction to her. I never have seen his method of warping the flap but I think it is a very ingenious method and shall employ it in the future.

Chairman Moore: Is there any further discussion?

I would like to make a few remarks myself.

Chairman Moore (Asheville): Dr. Sparrow made the remark that you could not transplant any skin the distance of the tube. I would like to call his attention to the fact that you can very easily do this if you will form your flap and put it right back down. You will have twice the blood supply then, and then you can transfer the flap of skin on the end of your tube. I recently closed a very large defect of a chest resulting from an abscess involving the entire lobe of one lung which I attempted to close once and failed. I finally closed it by doing a lobectomy on the remaining tissue and throwing in a previously prepared skin flap attached to a tube. I had to prepare that flap in three stages. If you will dissect your flap up and put it right back down you can transfer considerable portions of skin to your tube.

Dr. Sparrow mentioned that if you cross the mid-line you will lose a portion of your flap. I lost a little portion of that flap because I crossed the mid-line and did not realize what I had done. On a recent patient who had a traumatic amputation of the hand, in doing another tube graft, a pedicle graft, I crossed the mid-line in trying to close a defect on the hand, and that portion beyond the mid-line died. It is certainly true that if your flap crosses the mid-line, that portion when transferred is likely to die, but it didn't occur to me at the time. The fact is that the blood vessels don't cross the mid-line, but it is a very useful form of procedure, and unquestionably it is the only way in the world that you can make a graft work under certain circumstances.

Is there any further discussion? If not, will you close the discussion, Dr. Sparrow?

Dr. Thomas D. Sparrow (Charlotte): I have nothing further to add, Mr. Chairman, and thank you both for the discussion.

Chairman Moore: The next paper is by Dr. C. L. Haywood, Jr., and Dr. Charles C. Roper, of Elkin, on "The Treatment of the Fractures of the Spine in the Small Hospital." (Applause.)

Dr. Haywood presented his prepared paper. (Applause.)

THE TREATMENT OF FRACTURES OF THE SPINE IN THE SMALL HOSPITAL WITH A REPORT OF TWENTY-FIVE CASES

C. L. Haywood, Jr., M.D., and Charles C. Roper, M.D.
Elkin, N. C.

In these days of ever increasing speed, which modern transportation methods involve, the small hospital is becoming more and more the first line of defense in the treatment of traumatic injuries. Campaigns are under way all over the country to decrease the frightful mortality and morbidity from automobile accidents. A large number of these accidents occur in rural communities and the burden of taking care of them falls upon the small hospital.[1] It is imperative, therefore, that the small hospital be prepared to receive and treat adequately these surgical emergencies.

The first step in such preparation is to interest one or more members of the staff in the treatment of traumatic injuries and fractures, and placing the responsibility for their immediate and appropriate treatment in his or their hands.[1] It is then up to this chief of the emergency service to see that the emergency room and x-ray services are available twenty-four hours a day, and three hundred and sixty-five days a year, for the proper reception and treatment of these patients. In organizing such a service in the Hugh Chatham Memorial Hospital we have been surprised at the large number of fractures of the spine, which have come our way. I have been constrained to review the cases of fracture of the spine, which we have seen, and study the literature on this subject in order to render a better service in the future. Thirteen of these cases were seen on the service of Dr. Foy Roberson at the Watts Hospital in Durham during my association with him, and to whom I am greatly indebted for the privilege of reporting them, and twelve cases from my service at the Hugh Chatham Memorial Hospital in Elkin.

The treatment of the patient with a fracture of the spine should begin at the place where the accident producing the injury occurred.[2] It is important, therefore, that physicians take every opportunity to spread knowledge to the general public of how to handle a patient who has been in an accident and complains of a pain in his back, or who is unconscious and may possibly have an injury to his back. The majority of fractures of the spine are produced by acute flexion, and the resulting deformity is usually a compression of the body of the vertebra with, at times, a dislocation of the vertebra, usually backward, with varying degrees of cord and nerve injury. A person riding in an automobile which suddenly collides with another object and is stopped, has his spine thrown into acute flexion, and if a break occurs the resulting deformity is one of flexion and compression. If a person falls

from a great height and lands on his shoulders or hips, or if an object falls upon a person, the head and shoulders are usually bent forward in an effort to get away from the object and the blow across the shoulders causes flexion of the spine. The rational treatment, therefore, to correct this flexion deformity is to place the patient in the *prone* position with the arms under the head (the same position in which one would place a drowning man for the purpose of giving artificial respiration). A pillow or coat under the head and under the pelvis increases the extension. What usually happens, however, is that the patient is picked up, one arm under his knees and the other under his shoulders, increasing the flexion of the spine, and the patient is dumped in the back seat of an automobile and brought to the hospital. It is impossible to estimate the damage that is done by the improper handling of patients before they reach the hospital. After the patient has been placed in the prone position, a stretcher of whatever material is available should be made and the patient lifted by the shoulders and hips and placed upon it. A simple way for providing a stretcher where none is available is to take two coats, button them, and turn them wrong-side-out (this leaves the sleeves inside), then cut two small sapplings strong enough to support the weight of the patient, strip them of their branches and run the same through the sleeves. A space is left between the two coats and the head, shoulders, and thorax are placed on one coat, and the hips and thighs on the other, the abdomen occupying the space between the two coats. A third or fourth coat may be added to make the stretcher longer if available. If an automobile is available, the improvised stretcher may be supported on the back of the front and back seats respectively, or the patient may be carried on the stretcher by hand to the place where transportation is available.

All patients having suspected spinal injuries should be carried at once to the nearest hospital providing x-ray facilities. The patient arrives at the hospital, and unless the chief of the emergency service is on the job and instructs the hospital attendants as to the handling of the patient, further damage may be done. We have instructed our orderlies and nurses not to attempt to remove a patient who has been injured, from an automobile until the patient has been seen by a member of the staff. The patient is examined as well as possible in the vehicle in which he has been brought to the hospital and his general condition noted. He may be in a state of shock, collapse, bleeding, slumped forward, in flexion, on the back seat of a car, with one or more of his extremities dangling. If the patient is conscious the first thing he is asked is, "What is your complaint," and "Have you any pain in your back?" If he says no, the back is palpated and if any deformity or tenderness is found, or if any suspicion of fracture is entertained, we ask, "Can you move your extremities?" "Have you any pain in your extremities, abdomen, or elsewhere?" The head is inspected, the thorax,

abdomen, and extremities are palpated through the clothing to determine gross signs of injury. If he is unable to move his extremities the diagnosis of cord injury is almost certain. If spinal injury is suspected, the patient is removed from the car face first, with appropriate manual traction for any suspected cervical or long bone injury, and placed prone on the stretcher at the side of the car. Most of our patients have so arrived. All available hands are conscripted for getting the patient on the stretcher with the least possible movement of the spine. The patient is then conveyed on the stretcher to the x-ray room where enough of his clothing is removed to take his blood pressure to further determine the state of shock. If the patient is shocked, the head of the x-ray table is lowered and the patient put in extreme Trendelenbergh position and intraveous fluids given while a donor for transfusion is being secured. Our x-ray table is of the type which allows the Trendelenbergh position. While the patient is being treated for shock by position, heat, morphia, etc., x-rays are being taken. Posterior-Anterior and Lateral views are made without disturbing the prone position of the patient if possible. It is important for the physician to remain with the patient and assist the x-ray technician. If the patient is not in shock, and is not in pain, examination is proceeded with and complete physical examination is given in order to determine the presence or absence of injury to the spine and complicating injuries elsewhere. It is, of course, important to determine the presence or absence of intra-abdominal injuries before morphine is given. If the patient is not suffering, a history of the injury is first obtained before the examination is done. A careful history of the method of injury and mechanism involved in producing the injury of the spine is most illuminating in making an accurate diagnosis of the case. Because of the severe nature of the trauma which causes fractures of the spine, one frequently finds other associated injuries of the head, internal organs, and limbs. A complete physical examination is, therefore, necessary to rule out other injuries. At times the other injuries overshadow the injury to the spine. For example, in the case of fracture of the skull, the patient may be unconscious and have bleeding from the ears, nose, and throat, and the injury to the spine may pass unnoticed while treating the skull injury. Fractures of the spine usually present symptoms common to fractures elsewhere, the essential signs being: localized pain, tenderness, muscle spasm, deformity, limitation of motion, crepitus, and, in cases where dislocation has occurred with accompanying injury to the spinal cord or nerves, neurological signs. Crepitus is usually only present in cases of fractures of the spine where the spinous process or transverse processes are involved. Ecchymosis is not common. No attempt is made, however, to elicit all of these signs, because in every case where suspicion of fracture of the spine exists, we believe x-rays should be made, both the A.P. or P.A. and Lateral views. Modern x-ray

technique gives an accurate picture of the bony injury and enables treatment to be undertaken intelligently. Fractures of the spine are at times produced by comparatively trivial injuries, and one must be on his guard to suspect such injuries and x-ray where the slightest suspicion exists. One must not forget that some fractures of the spine incapacitate the patient so little that he is able to get up and walk[4] and resume his daily tasks and does not realize that an injury to the spine has taken place until he begins to develop a kyphos some months later, (Kummel's disease, See case No. 12 below). In addition to the usual physical examination, complete neurological examination is also imperative. At the Mayo Clinic[5] all cases of fracture or suspected fracture of the spine are seen both by an orthopedic surgeon and a neurologist. If there is no evidence of cord or nerve injury the treatment of the patient is by an orthopedic surgeon. If there is evidence of cord or nerve injury the patient is treated by both the orthopedic surgeon and the neuro-surgeon. In a small hospital the surgeon who has charge of the case will do well to consult with one of his medical colleagues, the surgeon acting as the orthopedist and the medical man as a neurologist.

Usually by the time a careful history has been taken, physical examination made, x-rays made and studied, relatives of the patient begin to arrive and want to know, "What's the matter with him?" and "It it serious, doctor?" As in the case of fractures of the skull where there is no inter-cranial injury, fractures of the spine where there is no cord or nerve injury usually yield to orthopedic treatment with good results and the prognosis is good. On the other hand, as is the case with head injuries, injury to the spinal cord and nerves is an extremely serious affair. Prognosis must be guarded because some patients having apparently trivial injuries may progress to hopeless invalidism, while some patients with complete paralysis may, with appropriate treatment and relief of pressure on the spinal cord, make complete recovery. In proportion to the amount of tissue damaged, injuries to the cord and nerves are more serious than injuries to the brain. For example a large tumor growing in the brain may cause no symptoms whereas destruction of a small area of the spinal cord may cause paralysis.

The diagnosis having been made, the proper method of treatment for the particular type and location of fracture encountered must be decided upon. It goes without saying, of course, that if the patient has not recovered from his shock, further steps must be taken to combat the shock. There are, of course, some cases in which the immediate x-raying of the patient can not be done because of the extremely precarious condition, but in most instances this can be carried out while methods of treating shock are being instituted. If it is a case of severe shock, clothing is loosened, the patient placed in bed (ordinary hospital gatch bed)[6] with the head at the foot of the bed in case of a thoracic or lumbar spinal fracture, with the site of the fracture immediately

over the portion of the gatch bed which ordinarily is used to raise the patient's knees, this portion of the bed is then raised, thus obtaining the position of hyperextension. The head of the bed (the patient's feet) is then raised and the usual methods of combatting shock instituted. Given the patient without shock, or the patient who has recovered from his shock, we now can proceed with consideration of the methods available for treatment. Examination of the blood and urine, including the Wassermann test if, of course, a prerequisite to treatment.

We will discuss first the treatment of the simple compression fracture without cord or nerve involvement of the thoracic and lumbar vertebra, as this is the type of fracture of the spine which is most frequently encountered. The 12th thoracic and 1st lumbar vertebra are the ones most frequently involved, with a more or less gradual decrease in frequency above and below this point.[3] We have been struck by the number of our patients in whom multiple vertebrae were involved, one vertebra being involved to the greatest extent and those just above and just below it to a lesser extent. The simplest treatment of all is "Rest in bed." [7] The period of rest depending upon the severity of the fracture, rest in bed may be continued until the fracture is completely healed or the patient may be gotten out of bed at various stages with some type of support as described below. Simple bed rest allows the force of gravity to overcome to some extent the flexion deformity and many good results have been obtained by this method. As most beds sink some in the center it is therefore advisable to place boards between the spring and mattress to make a hard bed. Various simple devices may be used in combination with bed rest to increase the hyperextension, as Thompson and Miles[8] suggest a "roller-pillow" placed beneath the site of the fracture, the support of the pillow may be reinforced by sand bags. If the fracture is in the lower portion of the spine, the foot of the bed may be elevated and adhesive plaster traction applied to the lower extremities, and vice versa in a fracture of the cervical or upper thoracic region, the extension being applied to the head by a sling or skeletal traction.[26-27] Patterson[6] has suggested the use of a modified hospital bed, using the knee-rest portion of the conventional gatch bed as a fulcrum for hyperextension with a pulley for applying traction; as mentioned above we use this method for early treatment in cases of fracture of the spine associated with shock. Stookey[9] has advised a simple method of securing hyperextension. He uses an air mattress with a rolled blanket placed beneath the site of the fracture and another blanket rolled beneath the knees and a wide piece of adhesive applied to the mattress to produce angulation over the rolled blanket. This appeals to us as a useful method where the patient's condition is too critical for the more complicated methods of treatment, the air mattress being a great aid in preventing decubitus ulcers and otherwise facilitating nursing care. The air mattress with removable center for use of the

bed pan is a further improvement. We have not had occasion to use this mattress, though we might possibly have used it to great advantage in case No. 2. q.v. A further simple method of treatment is placing the patient on a Bradford frame[10] with hyperextension at the site of the injury in the same manner as one would treat a case of tuberculosis of the spine.

Wilson and Cochran[10] in their textbook state: "Recumbent treatment is essential with fixation of the spine by plaster of paris. It seems logical to attempt correction of the deformity, particularly in the cases where there is evidence of nerve root injury, but we have yet to be convinced of the real effectiveness of any procedure yet advocated for this purpose. Most of the methods proposed aim to accomplish this by forced hyperextension of the spine at the seat of the injury, various mechanical devices being used to provide a fulcrum at the apex of the deformity, combined with plaster fixation of the pelvis and spine. As a matter of fact, the key to correction of deformity is contained in the matter of correct diagnosis at the time of accident, and the immediate institution of *recumbent treatment* to prevent deformity from increasing. In cases so treated the force of gravity is transformed from a deforming agent into a corrective one and kyphos is never conspicuous. Our own preference is, therefore, to treat such fractures in recumbency upon a two-section plaster shell or bed. Great care should be employed to insure a close fitting mold that properly supports the lower back and lower ribs. The shell should include the head and neck and below should extend to the knees, thus fixing the hips, without which solid fixation of the pelvis and lumbar spine is not obtained. When the fracture is in the cervical and cervico-dorsal region, the extension should be applied to the head. When it is situated in the lumbar spine, continuous traction should be applied to both legs by means of weights and pulleys. Ordinarily the patient lies in the posterior shell on a Bradford frame with the anterior portion removed. At regular intervals, however, in order to relieve the back and to care for the skin, the anterior section is buckled in place and the patient turned on the face and the posterior section removed. There is considerable discussion as to the length of time recumbent treatment should be employed. We believe eight to ten weeks is sufficient for solid union. The patient is then allowed up in a plaster jacket, which, in case of injury to the cervical or upper dorsal spine should be of the Minerva type to include and fix the head and neck. This jacket is worn for six to eight weeks and then, depending upon the location of the fracture, the patient is allowed to go without support (mid-dorsal fractures), the back brace is worn (lumbar fractures), or a Thomas collar is used (cervical or upper dorsal fractures). The period of disability should not extend beyond six months, and the progress of healing which is accomplished by the formation of bony bridges uniting the injured vertebra to those above and below should be followed by

roentgenograms made at regular intervals." Osgood[16] and his Boston school approve this method.

The above methods of treatment constitute what might be considered the more conservative methods. Various combinations of these may be used. More conservative writers advocate some form of support up to a period of twelve months.

More recent authorities writing on the subject advocate a somewhat more direct attack upon the deformity. The two most widely used methods of correcting the flexion deformity are those of Watson-Jones[11] and of Rogers.[12] On the Continent the method of Böhler[50] is widely used. These methods involve hyperextension to correct the deformity and plaster of paris cast to maintain the correction. In the Watson-Jones method the patient lies prone between two tables of unequal height, the head and arms resting on one table, and the lower extremities on the lower table. The patient's trunk sags between the two tables and hyperextension is gradually accomplished by gravity. Davis[13] suggested a somewhat similar method with anesthesia and forced manipulation. In the Rogers method hyperextension is accomplished with the patient in the supine position, by placing him on a convex frame, the convexity of which is gradually increased, the point of greatest convexity being at the site of the deformity. Böhler[50] employs a skin tight plaster cast and gets the patient up very early. Various mechanical devices, such as weights, hyperextension frames, and a simple modification by Ryerson,[13] in which he uses an automobile jack for the production of hyperextension are recommended by various authorities. Watson-Jones[11] begins exercises as early as possible in bed, and the patient is allowed out of bed in a week or ten days. The cast is worn four months and the patient returns to work in nine months. No brace is used. Rogers allows fifteen to sixty minutes in hyperextension frame before applying cast. He also allows the patient out of bed early if the compression deformity is in the anterior convexity of the spinal column. He keeps the patient in a cast three to four months, then applies a brace for three to four months returning the patient to work in nine to twelve months. Many authors have discussed both methods. Stimson[14] says, "With such authorities as Watson-Jones and Rogers disagreeing on this point (wearing of brace) no definite conclusion can be reached."

A more radical method is described by Parmley[15] who places the patient between two tables, as in the Watson-Jones method, and places a sand bag over the site of the fracture and pounds the sand bag to reduce the deformity, profound anesthesia being used. This method seems to us unnecessarily dangerous, good results being obtained with more conservative measures.

A still more radical method is reduction of deformity under anesthesia, by open operation, by one of the bone graft methods, such as that of Hibbs,[17] The ultimate results of this method is that it imitates nature

by healing by ankylosis. We believe that this method should be used only as a last resort, after conservative measures have failed and painful back persists, or in cases which are seen late, such as Kummell's[18] disease. On the basis of our limited experience and the review of literature, we believe that the best method for use in the small hospital is a combination of the Watson-Jones method with the more conservative attitude of Roger toward getting the patient out of bed with rather prolonged fixation. Our method is as follows: The condition of the patient being suitable, the patient is given a third of a grain of morphine at the earliest possible moment following the injury and taken to the operating room, lying on the stretcher in prone position. The stretcher is rolled up to the head of the operating table and the patient's head and arms are placed on the operating table, the patient being instructed to grasp the sides of the table. The head is turned to one side and placed on a small pillow for comfort. The pelvis is then lifted and the stretcher is partially withdrawn until only the thighs and legs rest upon it. This allows considerable prolapse of the abdomen and thorax between the two tables with resulting hyperextension of the spine. The head of the operating table is now pumped up higher than the level of the stretcher, thus increasing the hyperextension, the height depending upon the degree of the deformity and the degree of hyperextension which seems desirable. If there is kyphos present, pressure is made with the palm over this point in an attempt to reduce the kyphos. Where there is a fracture dislocation it is most important that the dislocation be reduced. We have not resorted to anesthesia, though we may have done so to advantage in case No. 11, q.v. It has occurred to us that spinal anesthesia might be used to advantage in some of these cases. We have not run across any description of its use in literature. To give it the patient would have to be handled with extreme care as some difficulty might be encountered as the usual flexion of the spine for introduction of the needle would, of course, be contra-indicated. Examination of the spinal fluid at the same time would give valuable information. We are anticipating using it in the next case in which we have difficulty in reducing the dislocation. If there was complete block, of course, the anesthetic would not extend above the point of the block, assuring its safety.

A satisfactory amount of hyperextension and correction of deformity having been obtained, we put on a jacket of stockinette. Pieces of saddle felt are then placed over the iliac crests and lower costal margins and fastened with adhesive. Two long strips of saddle felt two inches wide are placed along either side of the spinous processes, from the tip of the seventh cervical spinous process to the mid-sacrum, in cases of upper lumbar and lower thoracic fractures, and up to the occiput in cases of higher thoracic fractures. Plaster of paris is then applied in the usual manner, as snugly as possible. The cast is necessarily somewhat shorter behind than in front. In front the paster is carried well up to the top

of the manubrium and well down over the pubic symphisis in order to maintain the hyperextension. The cast is applied sufficiently thick to allow for a generous window to be cut later in front over the upper abdomen and lower thorax without weakening it. As soon as the cast has dried sufficiently the patient is placed on the stretcher in supine position with pillows beneath the concavity of the cast to protect its curve and the patient is then carried to bed and placed in bed with his head at the foot, and the knee-rest portion of the gatch bed run up underneath the concavity of the cast to maintain its shape until it has thoroughly hardened. When the cast is sufficiently hardened the patient is encouraged to move about in bed as much as possible, and graded exercises as prescribed. Physiotherapy and massage are prescribed and very careful attention to the skin and genitalia is carried out.

In a day or two after reduction of the fracture or as soon as the cast is well hardened and the patient's condition permits, he is taken to the x-ray room and re-x-rayed in the AP and Lateral views. If reduction is unsatisfactory, the cast is removed and another attempt at reduction and re-application of the cast is done. If reduction is satisfactory, the patient is returned to bed and observed in the hospital for a period of two weeks. If during this time there are no complications and he shows no signs of cord or nerve injury, the patient is discharged to his home via ambulance. We do not feel that we are proficient enough in applying skin tight body casts, to allow the patient up in a week or ten days as Watson-Jones does. The patient is instructed as to his diet. A well-rounded general diet, high in vitamins and minerals, especially calcium, is prescribed. The patient is instructed as to continuation of his exercises which he has begun in the hospital. The patient's family is instructed as to the care of the bed and skin. They are advised to put the patient out in the fresh air and sun light as much as possible. If the patient does well and there are no complications, he remains at home under the care of his family physician in the cast until three months from the date of injury. At this time he is returned to the hospital; the cast is removed; he is re-x-rayed and re-admitted to the hospital. General physical examination and routine laboratory studies of the blood and urine are made to determine his status in improvement. He is then fitted for a Taylor back brace. When this back brace is secured for him, it is applied and he is allowed to return home for a period of another three months, during which time he increases his exercises, is up and about and performs light tasks about the house. At the end of this second period of three months he is re-x-rayed, and if there is no tenderness or kyphos and he is symptom free, the brace is removed and he is allowed to return to light work. He reports again at the end of the third three months, is re-x-rayed and if there is no kyphos, pain, etc., he is allowed to do light manual labor. At the end of twelve months

he returns for final check-up and if all is going well and re-x-ray shows no evidence of increased deformity and the bony trabeculae appear well healed, he is discharged with instructions to return to heavy work if his occupation demands it. At this time he is requested to return at the end of the second year for a final check-up at which time x-rays are not usually made unless there is some special indication for it.

We now come to the consideration of those cases in which there has been injury to the spinal cord and the spinal nerves or both. The wisdom of doing a laminectomy when there is pressure on the cord or nerves is still a moot point. Love[5] of the Mayo Clinic says, "Conservation should be the keynote in handling injuries of the spinal cord. There are few indications for operative interference." Wilson and Cochran,[10] Cotton,[19] and Nicoll[20] are on the conservative side. Scudder,[21] Bowman,[31] Speed,[22] Taylor[23] are more in favor of laminectomy. As one would expect the neuro-surgeons are naturally more inclined towards the operation than the orthopedists. The general surgeon who has had very limited experience with surgery of the cord is justified in following more conservative treatment. Coleman's[24] conclusions are very interesting. He says: 1. Clinical study of the patient with severe spinal cord injury generally fails to give early information as to the extent of the cord lesion. 2. Laminectomy for spinal cord injuries except in penetrating wounds is not indicated unless there is pressure on the cord. 3. The pressure on the cord following fracture dislocation can not be demonstrated by clinical study or x-ray examination unless there is considerable vertebral deformity. 4. Complete occlusion of the spinal subarachnoid space following injury should be taken to mean that the cord is compressed in a deformed dural conal. 5. The demonstration of such compression of the cord by Queckenstedt test should be considered as an unequivocal indication for operation. Love[5] of the Mayo Clinic agrees with him as to the value of the Queckenstedt test as an indication when laminectomy should be performed. He states, however, "The patient whose x-rays reveal unmistakable evidence of such marked displacement of one vertebra on another as to leave insufficient room in the spinal canal for the spinal cord at that level should not be subjected to operation. If not completely dissected, the cord in these cases has been damaged beyond any possibility of repair. If the patient is not completely paralyzed below the level of the injury when first seen or if under observation the paralysis becomes more marked or if the level of paralysis rises, laminectomy should be performed. If there is paralysis without subarachnoid block on lumbar puncture, the chances are that little would be accomplished by laminectomy." Thompson[2] suggests that the Queckenstedt test be performed and that if there is evidence of block, an immediate hyperextension reduction and a plaster cast be applied. As soon as the cast has hardened let it be bivalved and the

Queckenstedt test repeated. If it is still positive, then a laminectomy should then be done as a last resort. This appeals to us as reasonable advice. In two of our cases, No. 2 and No. 10, q.v. laminectomy might have improved the outcome had it been feasible. In neither case, however, was the operation warranted due to the patient's precarious general condition.

The care of the bladder presents a difficult problem in the paralyzed case. There is no unity of the opinion as to the best way of doing it. We prefer to allow the mechanism of the so-called "automatic bladder" to become effective if possible. If the patient does not void automatically and is suffering undue discomfort, we catheterize the patient every twelve hours until bladder function is recovered or automatic bladder is established (See case No. 11). Urotropin is given from the onset in all cases of paralysis to forestall urinary infection, and mercurochrome 0.5 per cent sol. is injected into the bladder after catheterization. Some urologists recommend supra-pubic drainage. This, of course, is difficult if a body cast is to be applied. We have used it in one case, No. 13. Connors and Nash[25] state from their large experience that they are firmly convinced that catheterization is largely responsible for a high percentage of mortality and that the automatic bladder should be established whenever possible.

The nursing care of the patient with partial or complete paralysis must be followed even more scrupulously than as above outlined for those patients without paralysis. The skin must be kept absolutely dry and clean and all wrinkles must be kept out of the bed clothes. Bony prominences such as the heels must be kept from supporting more than their share of the weight. An air mattress is strongly advised. Passive exercise must be carried out and everything possible done to preserve the integrity of the muscles, etc. in hope that the paralysis may be only temporary.

Fracture dislocations of the neck are best treated in our opinion by the Alfred S. Taylor[23] method. The main principal of this method is controlled traction of the head with counter-traction on the lower extremities. This is best done on a Hawley table. A portable Hawley table is available on the market and is used in our institution. Traction is applied to the patient's head by means of a moleskin sling beneath the patient's chin and beneath the occiput, both being fastened together above the patient's ear and then fastened to a rope which fastens around the surgeons waist. The surgeon thus makes traction by pulling backward with his body leaving both hands free to manipulate the patient's neck. Traction is made until the articulating processes are felt to unlock. Then the head and upper spine are allowed to sag downward still under traction with whatever manipulation is necessary to allow reduction. After reduction is accomplished, it is best

maintained by a plaster Minerva enveloping the entire thorax and neck up to the chin in front and occiput behind. Crutchfield[26] of Richmond and Gallie[27] of Toronto favor skeletal traction applied to the skull for reducing cervical fractures.

We will now proceed with the presentation of brief case reports, illustrated with lantern slides of the patients' x-rays, of the twenty-five cases which we have seen.

STATISTICS OF OUR CASES

Table 1. Summary of Case Reports

Hospital and No.	Sex	Age	Charity	Full Pay	Part Pay	Days in Hospital	Summary of History	Summary of Physical and X-ray Findings	Primary Treatment	Complications, Progress and Late Treatment
HCM 3157 G. C. No. 1	M	21	X	----	----	69	7/6/35 Riding in rear of truck when it ran off road and threw him out on his back. Brought in via ambulance.	Pain in mid back. Complete loss of sensation below crests of ileum. Complete paralysis both lower limbs, bladder and rectum. Shock. X-ray compression fracture of first and second lumbar with moderate lateral displacement and slight comminution.	Treated for shock for five days. Hyperextension, body cast applied Rogers Method. Cath. every twelve hours. Then voided. Cast bivolved after two weeks to treat pressure at site. Second cast 9/11. Taylor back brace and right angle stop braces 1/8. Wore back brace six months.	Pressure ulcer over site of fracture. Phlebitis of left saphenous. Control of sphincters in three weeks. Began to use right quadricep in two weeks and left in four weeks. Discharge 9/13 to County Home with fair control of both legs and complete return of sensation except right leg. Foot drop. 2/19 Still wears leg braces, walks with crutches, spastic gait. Foot drop, loss sensation right ankle and foot. Taking course in watch repairing.
HCM 3320 B. S. No. II	M	24	X	----	----	244	Driving light car hit by heavy truck, thrown out on back 8/26/35. Brought in via ambulance.	Unconscious, gross deformity at first lumbar vertebra which appeared to be displaced forward one and one-half inches. Lacerations of head. Contusion with hematoma right eye lid. Abdomen rigid. Developed jaundice in few days. Complete paralysis and loss of sensation below umbilicus. Paralysis of bladder and rectum. X-rays 9/7/35 after cast: Lat. view almost complete	Hyperextension with sandbags and pillows supine in bed. Treatment of shock, jaundice, lacerations, contusions, internal injuries. Cath. every twelve hours for ten days, then automatic bladder. 9/4/35 hyperextension body cast, Rogers method.	9/1/35 Slight sensation returning to genitals and thighs. 9/3 jaundice clearing, abdomen soft, 9/5 pressure sore at fracture site. 9/10 cast opened to treat pressure sores. 10/4 new cast applied, same method. 10/8 pains in legs, coryza. 10/23 burns on calf of legs from infra red lamp treated with tannic acid. 10-29 cast removed to treat pressure sores on sacrum and right hip. 11/13 to

								correction of compression first L. V. AP view comminuted body with slight lat. displacement. 4/9/36 essentially same with callous formation.		1/9/36 septic temp. loosing out, failing. 1/9/36 to 4/25 gradual improvement. 4/9 clonus in right foot. 4/25 discharged to home. Complete paralysis below umbilicus. 5/25 clonus both feet. Pressure sores healed except sacral. 10/6 slight sensation lower abdomen. All reflexes lost. Positive Babinski. 1/23 General condition excellent; otherwise unchanged. Occupational therapy prescribed.
HCM OP 401 E. H. No. III	M	36	X	----	----	--------	11/27/35 Fell from the back of a truck as it started off, landing on back and right shoulder. Walked in.	11/27/35 complains of pain over lumbar spine and to right of it, and stiffness of right shoulder. Neurological and general physical negative. 11/27 examination: Stiffness of right shoulder, acute tenderness over lumbar vertebrae and right of it. Leg raising test caused pain in right sacro-iliac region. X-ray: AP fracture of fourth right lumbar transverse precess, lat. Slight compression ant. border fifth lumbar vertebra.	11/27/35 Hospitalization and cast advised and refused. Back strapped with adhesive. Patient went home and stayed in bed ten days and returned to his work. (Executive)	Uneventful except for backaches for several months.
HCM 4004 Mr. R. V. No. IV	M	27	----	X	----	13	4/7/36 Was standing under a porch about eight feet high when it fell, striking him on the head, and knocking him backward. He fell on his back, striking some object on ground. A brick	4/7/36 Marked tenderness and rigidity about lower thoracic spine. Attempted movement causes severe pain in same area. Marked rigidity of abdomen. No paralysis or loss of sensation. Reflexes normal. 4/8/36 X-ray 50 per cent compression of the 11th thoracic vertebra. 4/17/36	4/7/36 Put to bed in supine position. Hyperextension with pillow under back on hard bed. 4/9 Hyperextension body cast applied Rogers method.	4/9 to 4/19 Uneventful convalescence. 4/19 Discharged in cast via ambulance. 7/1 Allowed to sit up and use crutches. 8/13 Cast removed. Rx Hard pallet, slight localized tenderness. 9/22 Moderate stiffness in A.M. General condition good. Gained fifteen pounds. 10/7 Returned to

TABLE 1—(*Continued*)

Hospital and No.	Sex	Age	Charity	Full Pay	Part Pay	Days in Hospital	Summary of History	Summary of Physical and X-ray Findings	Primary Treatment	Complications, Progress and Late Treatment
							wall one and one-half feet high kept the porch from resting on him. He was unconscious for a few minutes. Arrived at Hospital forty minutes later, complaining of severe pain in lower thoracic spine.	X-ray 20 per cent compression 7/1/36 20 per cent compression.		work six months post injury. 1/14/37 Doing light farm work. Slight pain at first none last two months. 4/19/38 Looks well and strong doing heavy farm work. Occasional slight pain at fracture site after hard day. No muscular weakness or loss of sensation or sphincter control. No gross deformity or local tenderness.
HCM 4521 T. E. No. V	M	23	X	----	----	9	9/6/36 Thrown from roadster. Manner of fall unknown. Unconscious hour or so. Brought in about three hours after accident in car.	9/6/36 Complains of pain upper thoracic spinal region. Increased kyphosis upper thoracic region. No deformity felt. Neurological and general physical negative. 9/7 X-ray AP Mod. compression fourth thoracic vertebra. Lat. marked compression body fourth thoracic vertebra. Break in sup. surface. Alignment good both views.	9/6 Supine in bed. Hyperextension with sandbag. 9/7 hyperextention cast chin to pubis, Rogers method. 12/9 cast removed. Bed rest continued for three months. (Unable to buy brace)	9/16 Discharged in cast via ambulance. 12/9 X-ray compression barely discernible. Health excellent. 3/13/37 Feeling fine. Weight 151, usual 165. 6/19 Physical examination: Normal, healthy male. Examination negligent. Discharged cured.
HCM 5875 Mr. O. M. No. VI	M	30	----	X	----	14	11/8/37 Removing supporting scaffold from bridge when a heavy timber fell striking him between scapulae. Brought to	Complains of severe pain thoracic spine, moves with grest difficulty. Has coryza. Very tender to pressure over mid thoracic spine. Holds neck and back rigidly. Respiration labored. No paraly-	11/8/37 Soft bed, prone position. Cast delayed because of coryza. 11/11 Cast applied hyperextension symphisis	11/9/37 Patient got out of bed during night. 11/10 to 11/22 uneventful convalescence in hospital. Discharged via ambulance. 2/23/38 Cast removed, Taylor back brace ordered, kept

							hospital via ambulance forty miles.	sis or loss of sensation. Reflexes normal. 11/8 X-rays: Complession fracture 6, 7, 8 thoracic vertebrae with marked narrowing ant. borders. Sixth almost completely collapsed. Vertebrae also show hypertroihic lipping. Sl. increase thoracic curve.	to chin. Rogers method. 2/30/38 Taylor back brace applied.	on back in hospital until brace obtained. Brace applied, patient discharged to return in three months. Comfortable, no complaints, not returned to work.
HCM 6021 Mr. R. C. No. VII	M	30	X	---	----	14	12/19/37 Injured in Auto wreck, brought in sitting up in car.	Complaining of pain in upper lumbar spine 12/19/37. Localized pain and tenderness over thoracic lumbar region. Severe pain on movement in same area. Minor lacerations of head. No paralysis or loss of sensation. No shocks. No incontinence. 12/19 X-ray AP Fracture line through body twelfth thoracic vertebra. Lat. 33 1/3 per cent compression ant. border twelfth thoracic vertebra. Small fragment separated from upper ant. border 12/28/37 Post reduction film compression barely discernable.	12/19/37 Lifted from car, face forward, prone position on stretcher. Prone position in bed. 12/20 body cast. Hyperextension Watson-Jones method.	12/19 to 1/1/38 Uneventful convalescence. 1/1 Discharged in ambulance in cast. 3/11/38 Cast removed. Re-X-ray. Taylor back brace ordered. Rest in bed 4/2/38 Taylor back brace applied. Out of bed. To return in three months.
HCM 6229 Mrs. F. M. No. VIII	F	18	----	---	X	11	2/22/38 Backache since birth of baby seven months before. Questioning revealed that one month before delivery she fell from a style, landing flat on her back (fall of three feet). Has	2/22/38 Marked kyphosis at site of first Lumbar Vertebra. Moderate tenderness to pressure, palpation, and percussion. Marked limitation of flexion at this point, extreme limitation of extension. No paralysis or sensory changes. Has pain and tenderness in both lower quadrants (referred pain?).	2/22/38 Hyperextension with gatch bed. Patient's head at foot of bed and knee rest raised. 2/28/38 Hyperextension body cast Watson-Jones method.	2/22/38 to 3/5/38 Uneventful convalescence in hospital. 3/5/38 Discharged in cast. To return in three months for Taylor back brace.

TABLE 1—(*Continued*)

Hospital and No.	Sex	Age	Charity	Full Pay	Part Pay	Days in Hospital	Summary of History	Summary of Physical and X-ray Findings	Primary Treatment	Complications, Progress and Late Treatment
							had increasing kyphosis and pain in back since delivery. No loss of sensation or paralysis. Has had considerable pain in both lower quadrants.	X-ray Lat. view 66 2/3 per cent compression anterior border first Lumbar vertebra. Considerable hypertrophicarthritis. Compression has appearance of old injury.		
HCM 4902 W. E. H. No. IX	M	65	----	X	----	16	1/14/37 Riding in front seat of truck when it swerved to miss a car and ran into telephone post. Had immediate severe pain in small of back. Able to walk and consulted lawyer, then went to Dr. who sent him to hospital. P. H. reveals he had a fall twenty-nine years ago, falling eleven feet from a scaffold onto his back. L. M. D. suspected fracture of spine. No X-rays made. In bed for sev-	1/14/37 Came to hospital in car. Walked in complaining of severe pain in Lumbar spine. Localized tenderness and muscle spasm. Groaning with pain. No loss of sensation or paralysis. X-ray Compression fracture twelfth Thoracic Vertebra. Generalized calcification of the vertebra and irregular fracture line extending through the body. No new bone formation. Anterior border measures 21mm, whereas eleventh measures 29mm. Extensive hypertrophic change about the other vertebra. Old or new fracture.	Hyperextension with sand bags, in supine position on hard bed. Plaster cast advised and refused after expert opinion on X-ray was obtained. Patient sent home to continue same treatment and to return in one month. Has not returned.	Patient was resting comfortably with no pain or other symptoms when discharged from hospital sixteenth day. 4/1/38 Returned following request letter, saying he was well as before accident. Has occasional backache but can do as much as before accident. Went back to work about a month after leaving hospital.

							eral weeks. Could not work for four months.			
HCM 5424 Mrs. M. M. No. X	F	49	----	----	X	52	6/29/37 Fell from cherry tree, landing on back. Immediate pain in mid-back. Unable to move lower limbs. Brought thirty-five miles to hospital in ambulance.	6/29/37 Gross deformity of spine at level of Thoraco-Lumbar junction. Complete paralysis below umbilicus. Complete bilateral sensory loss below umbilicus. Complete loss of abdominal and lower extremity reflexes. X-ray marked compression twelfth Thoracic Vertebra with dorsal displacement. Also marked compression eighth Thoracic Vertebra without displacement.	Hyperextension cast applied two hours after admission, after reduction by forced hyperextension in prone position. Watson-Jones method. Catheterized every twelve hours.	Low grade septic temperature during hospital stay. 7/8/37 Considerable pain in chest. Patient gradually lost weight and strength. Poor appetite. Very despondent. 7/14/37 transfused. Developed pressure sore over twelfth thoracic vertebra and sacrum. Cast bilvalved for treatment. 8/18/37 Discharged to home with very poor prognosis. Developed pressure sores on both legs at home. Gradually went down hill and died October 25.
HCM 5438 Mr. C. C. No. XI	M	42	----	----	X	31	7/3/37 Fell from roof of tobacco barn landing flat on his back. Immediate pain in mid-back and numb feeling from umbilicus down. He was picked up and placed in car and brought ten miles to hospital. Able to move legs some with help.	7/3/37 Spinous process of first Lumbar Vertebra very prominent, swelling and tenderness about it. Sensation of lower limbs to touch and pain normal, except for partial loss below knees and complete loss below ankles. Says he can't move legs because of pain, moves them with help. Reflexes: Knee jerks hypoactive. No clonus. Negative Babinski X-ray Lateral, marked compression first Lumbar Vertebra with slight dorsal displacement. Anterior-posterior compression without gross displacement.	Immediate reduction and hyperextension cast (Watson Jones Method). Catheterized every twelve hours for seven days. Indwelling catheter-changed every four to five days. Mineral oil and enemas. 7/15/37 Cast cut out over pressure sore. Treated with balsam peru and castor oil.	Slow temperature rise first sixteen days. Septic temperature Seventeen to twenty-three days. Epididymitis. Began voiding involuntarily twenty-fourth day and epididymitis responded to conservative treatment. 7/15/37 Small pressure sore over site of fracture. 8/2/37 Discharged to home via ambulance, able to control bladder and rectum. Good use of thigh muscles, but complete loss of dorsiflexion of foot. Weak plantar flexion. Complete loss of sensation in feet. 10/3 cast removed. Continuous bed rest at home for three months.

TABLE 1—(*Continued*)

Hospital and No.	Sex	Age	Charity	Full Pay	Part Pay	Days in Hospital	Summary of History	Summary of Physical and X-ray Findings	Primary Treatment	Complications, Progress and Late Treatment
										Physiotherapy at home continued. 1/3/38 Advised to get back brace and leg brace but unable to purchase them. Started getting about on home made crutches and braces. 4/19/38 Walks with crutches, spastic gait, slight toe drop left foot, marked in right foot. Good hip and knee movement. Sensation to touch lost on bottom of left foot and all or right foot and outer anterior surface of right leg almost to knee. Complains of pain in region of right iliac crest. Slight prominence of spinous processes at site. No local tenderness, some loss of lumbar curve. Has pressure sores over each ischial tuberosity. Controls sphincters except occasional night bedwetting. Has been teaching school for two months.
HCM 5582 Mr. J. C. No. XII	M	33	----	X	----	28	8/13/37 While standing on a ladder he lifted a heavy chain (150 lbs.) to lock it on a beam	8/13/37 Complains of severe pain over Lumbo-Sacral region. Localized tenderness over spine at level of iliac crest. Limitation of motion in lumbo-sacral joint.	8/13/37 Immobilization with adhesive and scultetus binder on hard bed for twenty-eight days.	8/13 to 9/9/37. In hospital, improved gradually. 9/25/37 seen at home, unimproved. 10/13/37 Unimproved. Consultation with orthopedic surgeon. 11/4/37 Un-

							when ladder slipped a little and "wrenched" his back. Continued to work for a few hours, pain gradually getting very severe, lumbosacral region, couldn't lift anything. Brought to hospital in car four hours after injury.	Straight leg raising on both sides caused pain in this joint. Flexion of pelvis or spine caused pain in this area. No signs of cord or nerve injury. X-ray Narrowing of right side of fourth lumbar vertebra and fracture of fifth transverse process.		improved, back strapped and patient sent to orthapedic hospital for physiotherapy exercises, etc.
Watts 8344 No. XIII	M	18	---	---	---	38	5/27/29 Auto accident. Able to walk at first.	5/27/29 Triangular fracture upper and outer part l. ileum. Some separation of fragment. Partial dislocation fifth cervical vertebra backward. Apparently small piece broken off upper and anterior portion of body fifth. 6/8 Practically same. 6/17 No change.	Pelvis strapped. Sandbags under neck two hours a day for ten days. 6/27 plaster cast to head and neck.	Discharged to UNC infirmary wearing plaster collar. 9/14/29 Plaster cast has just been removed, still has some stiffness of neck.
Watts 27380 No. XIV	M	19	---	---	---	46 9 3	8/22/35 Auto accident.	Well defined projection in area of ninth or tenth dorsal vertebra. Moderate kyphosis. Compression of anterior portion of body of 7, 8, 9 dorsal vertebrae. Marked Compression of body of twelfth dorsal with kyphos formation and posterior displacement. 9/2/35 twelfth dorsal appears increasing in its vertical diameter. 9/28/35 apparent increase in the deformity of seventh dorsal. Density of twelfth slight-	Hyperextension of back. 8/27/35 body cast. 10/1/35 body cast. 11/8/35 body cast.	Discharged wearing plaster jacket. Re-admitted four weeks later for new cast. Re-admitted two months later for removal of cast. Patient comes in for examination of back, is wearing back brace which is quite satisfactory, has no pain.

TABLE 1—(*Continued*)

Hospital and No.	Sex	Age	Charity	Full Pay	Part Pay	Days in Hospital	Summary of History	Summary of Physical and X-ray Findings	Primary Treatment	Complications, Progress and Late Treatment
								ly increased. 11/4/35 films show a dorsal convexity. Quality of bone is good. 1/10/36 marked improvement in appearance of twelfth dorsal which is definitely increased in width.		
Watts 25836 No. XV	M	19	----	----	----	31 2	10/20/33 Auto accident.	Abdomen tense, pain and spasm of muscles over lower back. 10/20/33 the third lumbar vertebra is crushed but there is no deformity. There are six lumbar vertebrae. Tip of right clavicle is cracked. 5/5/34 crushed body is more dense as if it has produced new bone. No deformity or kyphosis.	10/25/33 Body cast. 11/14/33 Body cast.	11/17/33 Walked. Discharged in cast to return to Dr. Roberson at monthly intervals. Patient was in automobile accident October 21, was in plaster cast four weeks.
Watts 26314 No. XVI	M	50?	----	----	----	45 11 13 7	12/27/33 Auto accident.	Not unconscious. Pain in back. Muscle spasm and palpable prominence upper lumbar vertebrae. Neuro: intact. No muscle weakness. Reflexes present and active. 12/27/33 Compression fracture body of first lumbar vertebra with narrowing of body. No deformity of spinal curve. 3/7 No further collapse, no kyphosis or angulation. Amount of bone re-	1/13/33 Body cast. 3/13/33 Body cast. 5/3/33 Body cast.	Discharged in cast. Readmitted at intervals for change of cast. See dates. 6/15/33 Cast removed. Examination of back 7/16/34 shows it well healed, no deformities and no pain.

								pair uncertain. 4/26 Body of first lumbar suggests bone repair. Intervertebral spaces not narrowed.		
Watts 22793 No. XVII	M	33	----	----	----	8	7/27/33 Fell from truck on head.	Unconscious. Paralysis below neck. 7/27/33 Comminuted fracture body of sixth cervical, displaced completely backward with considerable deformity. Crack through fifth body. 7/29 Almost complete reduction of backward dislocation. Body in normal position.	7/27/33 Traction by collar. Indwelling catheter. 7/29 Bradford frame.	Febrile reaction. Decubitus ulcer on buttocks in two days. Sphincter control apparently improving. Able to move arms. Temperature rose to 106 4/10 on eighth day and patient died.
Watts 24000 No. XVIII	M	20	----	----	----	13 5	9/12/33 Fell from third story window in semisitting position.	Tenderness over 11 and 12 dorsals with muscle spasm. No loss of motion or sensation. 9/12/33 Compression fracture body of twelfth dorsal, possible crack through the eleventh. No kyphosis.	9/14/33 Body cast. 11/14/33 Body cast.	Discharged to UNC infirmary in cast. Readmitted two months later for new cast.
Watts 22196 No. XIX	F	20	----	----	----	10 54	5/6/33 Auto wreck.	Unconscious for some hours. Right ear drum ruptured. 5/6/33 Fractures through right transverse process of one through four L. vertebrae. All slightly displaced. Small fragment separated from upper anterior margin of body of third. 6/4 The upper margin of the body of the third still shows slight flattening. The transverse processes are still separated, no evidence of union. The pelvis and hip joints are normal	5/11/33 Plaster jacket. 6/22/33 Body cast.	Walking day after cast was applied. Discharged to UNC infirmary. Readmitted after three weeks. Constant pain in back, difficulty in moving right leg, dizziness. Cast reapplied. Discharged to remain in bed several weeks. Recently patient has complained of right much backache and soreness in right leg. Admitted to hospital for treatment.

TABLE 1—(*Continued*)

Hospital and No.	Sex	Age	Charity	Full Pay	Part Pay	Days in Hospital	Summary of History	Summary of Physical and X-ray Findings	Primary Treatment	Complications, Progress and Late Treatment
								but there is slight disalignment of the pubis and slight widening of the sacro-iliac joint.		
Watts 10901 No. XX	M	29	----	----	----	17	3/10/30 Auto accident.	Immediate paralysis of legs, had control of sphincters. Tenderness and pain at base of neck. Spastic paralysis below shoulder girdle. No abdominal reflexes. Positive Gordon and Babinski. No clonus. Unable to distinguish between sharp and dull objects. 3/10/30 Fracture left lateral process sixth and seventh cervical vertebrae. Crushing fracture body of seventh cervical.	Bed rest.	Gradual improvement in motion and sensation in legs. Good functional use of legs on discharge.
Watts 13795 No. XXI	M	36	----	----	----	24	12/24/30 Auto-train wreck.	Laceration of scalp and shock. Reflexes active and normal. 12/24 Compression fracture upper margin of third lumbar. Wide fragment compressed on upper margin. Intervertebral spaces are not narrowed. Skull negative.	Laceration sutured. Bed rest.	Ambulatory on discharge.
Watts 15667 No. XXII	M	19	----	----	----	0	7/8/31 Run over by truck loaded with cement.	Deformity in lumbar region. No paralysis. 7/8/31 Fracture 2, 3, and 4 lumbar transverse processes on left. Lower margin of second is irregular.	Fluids, etc.	Suddenly became unconscious and died. Probable ruptured viscera or emboli.

Watts 23608 No. XXIII	M	17	----	----	----	143	10/4/33 Auto accident.	Paralysis of legs. Sensory level definite at umbilicus. Babinski normal. Severe cord injury. 10/5/33 Crushing fracture eleventh dorsal with one cm. of backward displacement. Several loose fragments. Body of fourth crushed, crack through laminal arch. Skull negative. 10/8/33 Curve about normal. Collapsed bodies have been pushed out almost to normal position.	10/5/33 Treatment for shock, hyperextension with sandbags. 10/8/33 Body cast. Indwelling catheter. Intravenous fluids and transfusions. 11/14 Small supra-public cystotomy following infection from catheter.	Marked traumatic psychosis. Right arm painful and difficult to move. Intermittent fever for seven weeks. Decubitus ulcer on back. Infection from catheter. Seen by Dr. C. C. Coleman. Mental state slowly cleared, no improvement in paralysis. Transferred to Duke.
Watts 32864 No. XXIV	F	38	----	----	----	240	11/30/34 Porch roof fell on her.	Paralyzed below waist. Spinal cord injury. 11/30/34 Compression fracture eleventh and twelfth dorsal vertebrae. Comminuted compression fracture second lumbar body with angulation and anterior displacement. 9/13 Increase in width of eleventh and twelfth vertebrae. Second lumbar essentially same. Definite encroachment upon neural canal.	Complete rest. 2/22/35 Body cast. Physical therapy. 6/10/35 Body cast. 7/23/35 Cast removed. 7/27/35 Cast reapplied. 9/18/35 Cast reapplied.	Sensory improved after ten days. Gradually regained motion in legs. Persistent pain in legs and back. Cast removed 3/19/35. Full sensation and motion after six months in plaster jacket. Readmitted after six weeks. Cast removed for one week. Without symptoms. Cast reapplied.
Watts 16982 No. XXV	M	----	----	----	----	13 9 4	8/31/31 Fell seven feet, landed on pavement.	In bed one week before admission. Pain only on motion. Was unconscious for while following injury. 9/8/31 Crushing fracture body of second lumbar vertebra. Crack through left transverse process. No deformity.	9/10/31 Body cast. 10/29/31 Body cast.	Discharged in cast. Readmitted one month later for new cast, one month later for removal of cast.
Males Female	21 4	* *	6 †	6 †	13 †	1,246 ‡	See Table IV.	See Table VI.		See Table VII.

* See Table II.
† See Table V.
‡ Average 49.8 days per patient.

Table 2—Sex

	No.	*Per Cent*
Male	21	84
Female	4	16

Table 3—Age

	No.	*Per Cent*
1-10	0	0
10-20	6	24
20-30	7	28
30-40	7	28
40-50	2	8
50-60	1	4
60-70	1	4

Table 4—Causes

	No.	*Per Cent*
Automobile Accidents	16	64
Collapse of Structures (porches, scaffolds, etc.)	3	12
Falls from Heights (fence, cherry tree, tobacco barns, windows, etc.)	5	20
Exertion	1	4

Table 5—Economic Status

	No.	*Per Cent*
Full Charity	6	24
Part Pay	6	24
Full Pay	12	48

Table 6—Vertebræ Involved and Type of Fracture
(The numbers refer to case numbers of Table 1

Region	Vertebra	Processes	Arches	Body	With Dislocation and Cord Injury	No. Times Involved
	1st.					
	2nd.					
	3rd.					
Cervical	4th.					
	5th.			13, 17		2
	6th.	20		17	17	3
	7th.	20		20	20	3
	1st.					
	2nd.					
	3rd.					
	4th.			5		1
	5th.					
Thoracic	6th.			6		1
	7th.			6,14		2
	8th.			6,10, 14		3
	9th.			14		1
	10th.					
	11th.			4,18, 23	23, 24	3
	12th.			7, 9, 10, 14, 18, 24	10, 24	6
	1st.	19		1, 2, 8, 11, 16, 24	1, 2, 11	6
	2nd.	19, 22, 25		1, 22, 25	1	3
	3rd.	3, 19, 22		15, 19, 21		3
	4th.	19, 22	23	12		1
	5th.	12		3		1
Sacrum Coccyx						
TOTAL	28	12		35	10	15

Table 7

Results	Case No.	No.	Per Cent
1. Cured	3, 4, 5, 6, 7, 9, 14, 15, 16, 18, 24	11	44
2. Partial Disability	1, 8, 11, 12, 13, 19	6	24
3. Complete Disability	2, 23	2	8
4. Died	10, 17, 22	3	12
5. Unknown	20, 21, 25	3	12
		25	100

BIBLIOGRAPHY

[1] Hammond, W. T. Importance of the Adequate Treatment of Fractures in Rural Hospitals. J.A.M.A. 1937, cix, 407, Aug. 7.

[2] Thompson, J. E. M. Fractures of the dorsal and lumbar vertebræ. Surg., Gynec. & Obst., 1937, lxiv, 440-446, Feb. 15.

[3] Sever, J. W. Compression fracture of the lumbar vertebræ; a report of 7 cases. Surg., Gynec. & Obst., 1916, xxii, 338-343.

[4] Priddie, K. H. Fractures of the spine. Med. Press & Circular, 1937, 368-369, Oct. 27.

[5] Love, J. G. Fractures of the spine with involvement of the spinal cord. S. Clin. N. Am., 1937, xvii, 1103-1114, Aug.

[6] Patterson, R. F. Use of a modified hospital bed for treating the fractures of the spine. J. Bone & Joint Surg., 1934, xvi, 207-208, Jan.

[7] Sabin, G. M. Some interesting fractures of the spine. N. Eng. J. Med., 1931, ccv, 1031-1044, Nov. 26.

[8] Thompson and Miles. Manual of Surgery, Vol. li, 6th Edition, 426. Oxford Med. Pub., 1921.

[9] Stookey, Byron. The Management of Fracture Dislocations of the Vertebræ Associated with Spinal Cord Injuries. S.G.O., 1937, lxiv, No. 2A, 407.

[10] Wilson and Cochrane. Fractures and Dislocations. J. B. Lippincott Co., Phil., 1925, Page 363.

[11] Watson-Jones, R. The treatment of fractures and fracture dislocations of the spine. J. Bone & Joint Surg., 1934, 16:30.

[12] Rogers, W. A. Treatment of Fractures of Vertebral Bodies Uncomplicated by Lesions of the Cord. Arch. Surg., 1935, 30-284.

[13] Ryerson, E. W. Automobile Jack for Fractured Spines. J.A.M.A., 1934, ciii, 562, Aug. 25.

[14] Stimson, B. B. A Review of the 1933 and 1934 Literature on Fractures. Surg., Gynec. & Obst. Int. Abs. of Surg., Jan. 1936, page 1.

[15] Parmley, V. Compression Fractures of Vertebral Bodies. Am. J. Surg., 1934, 25:419.

[16] Osgood, R. B. Compression fracture of spine. Bull. Am. Coll. Surg., 1926, 4.

[17] Hibbs. Jour. A.M.A., Oct. 26, 1918, p. 1372.

[18] Kummell, H. Arch. J., Nov. 24, 1921.

[19] Cotton, F. J. Dislocations and Joint Fractures. Ed. 2 Phila., 1926.

[20] Nicoll, A. The Treatment of Fractures and Dislocations of the Vertebræ. Am. J. M. Sc., June 1907, 869-877.

[21] Scudder, C. L. The Treatment of Fractures. Ed. 10, Phila., 1926.

[22] Speed, K. Fractures and Dislocations, Phila., 1916.

[23] Taylor, A. S. Fracture-Dislocations of the Neck. Arch. Neurol. & Psychiat., 1924, xii, 625-639.

[24] Coleman, C. C. Determination of Local Compression as an Indication for Laminectomy. J.A.M.A., 1925, lxxxv, 1109.

[25] Connors, J. F., and Nash, I. E. The Management of Urological Complications in Injuries to the Spine. Report of 54 cases without infection. Am. J. Surg., 1934, 26:159.

[26] Crutchfield, W. G. Further observations on the treatment of fracture dislocations of the cervical spine with skeletal traction. Surg., Gynec. & Obst., 1936, lxiii, 513-517, Oct.

[27] Gallie, W. E. Skeletal traction in the treatment of fractures and dislocations of the cervical spine. Ann. Surg., 1937, cvi, 770-776, Oct.

[28] Baker, R. H. Compression fracture of the vertebral bodies with delayed symptoms (Kuemmel's disease); with report of 7 cases. Surg., Gynec. & Obst., 1920, xxxi, 359.

[29] Bassin, J. N. Further observations of injuries to lower spine and pelvis. J. Med. Soc. N. Jersey, 1927, xxiv, 106-108, Feb.

[30] Boorsteing, S. W. Fractures of the spine. Am. J. Surg., 1927, iii, 116.

[31] Bowman, W. B., and Going, L. S. Traumatic lesions of the spine. Am. J. Roentgenol., 1926, xvi, 111-123, Aug.

[32] Davis, G. G. Fractures of transverse processes of the lumbar vertebræ. Surg., Gynec. & Obst., 1921, 272-277, Sept.

[33] Feaster, O. O. Delayed appearance of deformity in vertebral body fractures. J.A.M.A., 1934, cii, 598-599, Feb. 24.

[34] Fincher, E. F. Laminectomy in spinal injuries. J. Med. Ass. Georgia, 1932, xxi, 62-64.

[35] Geist, E. S. Fractures of the spine. Minnesota Med., 1925, 51-56, Jan.

[36] Hartwell, J. B. Isolated fractures of the transverse processes of the lumbar vertebræ. Colorado Med., 1929, xxvi, 37-42.

[37] Jones, F. Compression fracture of the spine developing delayed symptoms. J.A.M.A., 1923, lxxxi, 1860-1867, Dec. 1.

[38] Kennedy, R. H. Fractures of transverse processes of lumbar vertebræ. Ann. Surg., 1927, lxxxv, 519-528.

[39] Koudienko, J. M. Concerning some pathophys iological peculiarities of the function of the vertebral column; mechanism of fractures of the transverse processes of the lumbar vertebræ. Am. J. Roentgenol., 1936, xxxv, 468.

[40] McCauley, J. C., Jr. Fractures of coccyx and coccygodynia. Am. J. Surg., 1937, xxxvi, 303-307, April.

[41] Miller S. N. Injuries to the spine as related to arthritis. Illinois M. J., 1931, lix, 134-137, Feb.

[42] Pettit, R. T. Fractures of the transverse processes of the lumbar-vertebræ. Illinois M. J., 1935, lxviii, 318-320, Oct.

[43] Quaintance, P. A. Fractures of the transverse processes of the lumbar vertebræ; a report of 33 cases. Arch. Surg., 1929, xix, 968-985, Dec.

[44] Rush, L. V. Fracture of the sacrum. J. Bone & Joint Surg, 1929, xi

[45] Stewart, L. F. The frequency of unrecognized fractures of the vertebral column. Pennsylvania M. J., 1929, xxxii, 695-697.

[46] Thomson, J. E. M. "He's got a back." Am. J. Surg., 1933, xx.
[47] Trout, J. M. General principles in the diagnosis of injuries of the lower back and pelvis. Am. J. Surg., 1932, xvi, 253-266, May.
[48] Vernon, S. Fracture of the fourth lumbar vertebra; with paraplegia. Am. J. Surg., 1934, xxv, 178-179, July.
[49] Parmley, V. Compression Fractures; treatment after reduction. Arch. Phys. Therapy, 1937, xviii, 405-408, July.
[50] Böhler, L. U. The Treatment of Fractures. Vienna, 1929. (2) Basis of surgical therapy of fractures of spine. Chirurg, 1935, vii, 715-25, Oct.; and Monoatachs of Unfollh, 1936, xliii, 387-403, Aug.

Chairman Moore: The discussion will be opened by Dr. Thompson.

Dr. Raymond Thompson (Charlotte): Mr. Chairman, I might say this is one of the most complete papers I have had the pleasure of listening to in some time. I think that Dr. Haywood has reached the crux of the matter and covered all the essential points. This injury is going to be a very common one. When I was an interne in a hospital a good many years ago I don't think I ever saw a compression fracture. If I did I didn't know what it was, and I am sure there is no interne now who has not seen a dozen of them. Automobile accidents are the chief cause. Falling from a distance onto the buttocks or shoulders or something of that sort causes the rest of them.

Some sort of technique should be arrived at that is agreeable to the medical profession in the handling of these cases. I think that Dr. Haywood has covered the point very well although I don't handle my cases as he does here. I think all these cases are shocked to start with and they all have typhlitis and more or less disturbances of the rectum and bladder. I generally put the patient at the foot of a Gatch bed as Dr. Haywood said. We put the patient to bed immediately and if he is shocked we get his clothes off and prepare him, head to foot, and gradually crank up the back.

As soon as you get the back extended you have done, I think, all that is necessary for the moment. It is a question of paralysis. These cases that didn't recover from hyperextension alone, seemingly didn't recover, have all had the cords severed or have been so badly damaged that they didn't recover.

I have just seen a case directly under Dr. Pittman and Dr. Wilson that had a complete paralysis and very badly crushed vertebra. That patient was put to bed on a Gatch bed and nothing more, and cranked up and the vertebra pulled out. Some x-rays were taken at the bedside without disturbing the patient showing retraction of the bone so completely that a certain treatment could not be given which involved hammering of the patient, which is objectionable. This patient recovered very nicely. I believe that is all you can do. If the cord has been severed it is severed. If it has not been severed hyperextension will get the pressure off of it.

A good many years ago I used to use laminectomy on most of these cases but I had a bad series of results to report so I quit doing it. In that connection I wanted to give Dr. Pittman credit for an ingenious idea to use in places where he gets a bed that is not the type of bed

for the purpose. He has a small piece of automobile innertube about so long with the ends close together and the valve left in one end. He slides that under an extension at the side of the fracture and then inflates it. That gives a very nice air cushion of good hyperextension pressure and you can handle those cases for days.

In regard to the jackets I don't mean to say that we do not use jackets but we do not use them the first day. After the patient is straightened out and you have the pulse and bladder working all right then he gets a hyperextension jacket. I don't think we need to be afraid to do this. However, it is essential that the jacket fit and it must come to the top of the sternum and the bottom of the symphisis pubis and it must fit well. With adults you can put them on very well with the body hanging over two tables because it gets the arms and shoulders up which makes it all bumpy here and the patient on his face. You do not mold your plaster well against the front. If you are going to have the patient on a fracture table on an automobile jack under the fracture, lift the patient up, but you must be able to get to that part and mold your jacket there. After you get the patient up he does not get that terrible panic that develops from keeping him in bed a long time and saves hospital expense. Most of the patients are charity patients. Thank you.

Chairman Moore: Is there any further discussion?

Dr. Charles Allen (Wadesboro): There are just two points I would like to emphasize in Dr. Haywood's paper which I think are important. One of them is one that Dr. Thompson brought out, and that is the frequency of these fractures. I am in a small rural hospital in a town where we have no manufacturing at all and during the past year we have had eight of these compression fractures of the spine.

The next thing I want to emphasize is the fact you have got to take lateral x-rays in order to diagnose these cases. I had these eight cases last year and I missed two of these fractures. The next time I let one fellow go out and when I heard of him next he still had trouble. On going over to Duke they x-rayed him and found a compression fracture on the fifth thoracic girdle. We know it is a very unusual thing to get fractures high up in the thoracic vertebra. When you have an automobile wreck you cannot have those fractures where the wheel of the automobile hits the person higher. Unless you take lateral x-rays and unless you keep it in mind you are going to miss a considerable number of these compression fractures of the spine.

So far as the treatment is concerned I think it is important to get the patient up as early as you can. I usually put the patient in a plaster jacket and get him out of bed in about four weeks. And in about six weeks I put him in a Taylor back brace. When you have a fracture high up in the thoracic or cervicle spine it is necessary also to support the patient's head, and it is a very easy matter to put a piece of metal on an

ordinary Taylor back-brace, one strip of metal damming up the back of the brace, bound around the head to hold the patient's head up.

There is one other point I would like to mention. If you have a patient who is injured and he has a cough and it remains in his lungs it ought to make you very suspicious that he has a fracture, a compression fraction of the vertebra. If you do not take a lateral x-ray you are likely to miss it because we missed two. We are trying to keep up with them, but we missed two in one year.

Chairman Moore: I will ask Dr. Haywood to close the discussion.

Dr. C. L. Haywood, Jr. (Elkin): I want to thank you gentlemen very much for your kind discussion. There is one treatment I meant to say something about which I did not mention before, and that is a method described by Pythia in which he places the patient on an air mattress with a rolled blanket under the feet. He uses an air mattress with a removable central section for the use of the bedpan.

There is one more slide that I would like to show. This is a young woman, twenty-one years of age, who was walking across a fence and fell off, and hurt herself, and she was eight months pregnant. She noticed a deformity but thought she had sprained her back a little bit. Seven months after the pregnancy she reported a definite kyphosis at the site mentioned, her first lumbar vertebra. This patient developed a so-called lumbar fracture. She had a fracture at the time which produced no symptoms, and very trivial injuries sometimes produce these fractures of the spine and the patient is able to get up and walk. It is commonly thought that a patient with a broken back cannot walk, but some of them can and they don't get the symptoms until much later.

It is, therefore, important to x-ray every patient whom you think may possibly have a fracture of the spine and it is, as one of the doctors said, important to x-ray the patient in a lateral position. I thank you. (Applause.)

Chairman Moore: I would like now to have the report of the Nominating Committee.

Dr. R. B. McKnight (Charlotte): Mr. Chairman, the Nominating Committee has decided to recommend the nomination of Dr. Robert H. Crawford of Rutherfordton as Chairman of the Section for next year.

The nomination was seconded.

Dr. R. B. Davis (Greensboro): I move the nominations be closed.

The motion was put to a vote and carried.

Chairman Moore: I wish to thank you men at this time for the splendid program that you have made up this year and for your coöperation in running on schedule time. I would like also to apologize for the small size of the crowd but that was beyond my control.

The session was adjourned at 4:45 p.m.

WOMAN'S AUXILIARY
of
The Medical Society of the State of North Carolina
SIXTEENTH ANNUAL SESSION

OFFICERS 1937-1938

President.....MRS. W. T. RAINEY, Fayetteville
President-elect.....MRS. J. A. ELLIOTT, Charlotte
First Vice President and Chairman of Organization, MRS. J. R. TERRY, Lexington
Second Vice President and Chairman of Bed....MRS. J. B. SIDBURY, Wilmington
Third Vice President and Chairman of Loan Fund.....MRS. J. A. KEIGER, Greensboro
Chairman of Past Presidents Committee.....MRS. P. P. MCCAIN, Sanatorium
Recording Secretary.....MRS. GEO W. MITCHELL, Wilson
Treasurer.....MRS. E. CLARENCE JUDD, Raleigh

OFFICERS 1938-1939

President.....MRS. J. A. ELLIOTT, Charlotte
President elect.....MRS. C. T. STROSNIDER, Goldsboro
First Vice President and Chairman of Organization, MRS. W. T. RAINEY.....Fayetteville
Second Vice President and Chairman of Bed Fund.....MRS. ALFRED E. KENT, Granite Falls
Third Vice President and Chairman of Student Loan Fund.....MRS. R. A. MOORE, Winston-Salem
Recording Secretary.....MRS. R. E. FOX, Raleigh
Corresponding Secretary.....MRS. HARRY WINKLER, Charlotte
Treasurer.....MRS. E. CLARENCE JUDD, Raleigh
Chairman of Past Presidents.....MRS. P. P. MCCAIN, Sanatorium

COUNCILORS

First District.....MRS. R. L. CARTER, Gatesville
Second District.....MRS. E. B. BEASLEY, Fountain
Third District.....MRS. J. S. BREWER, Roseboro
Fourth District.....MRS. M. A. PITTMAN, Wilson
Fifth District.....MRS. R. A. MATHESON, Raleigh
Sixth District.....MRS. V. S. CAVINESS, Raleigh
Seventh District.....MRS. F. M. HOUSER, Cherryville
Eighth District.....MRS. W. P. KNIGHT, Greensboro
Ninth District.....MRS. C. D. HEDRICK, Lenoir
Tenth District.....MRS. W. C. JOHNSON, Canton

STANDING COMMITTEES

Public Relations.....MRS. J. D. ROBINSON, Wallace
Hygiea.....MRS. P. A. YODER, Winston-Salem

Historian.....Mrs. Eric Bell, Wilson
Scrapbook.....Mrs. C. H. McCants, Winston-Salem
Jane Todd Memorial.....Mrs. R. S. McGeachy, Weldon
Memorial.....Mrs. Isaac H. Manning, Chapel Hill
Research.....Mrs. G. M. Cooper, Raleigh
Program.....Mrs. Frederick R. Taylor, High Point
Poster.....Mrs. C. D. Thomas, Sanatorium

PAST PRESIDENTS

1923—*Organizing Chairman*.....Mrs. P. P. McCain, Sanatorium
1924.....Mrs. P. P. McCain, Sanatorium
1925.....Mrs. I. W. Faison, Charlotte
1926.....Mrs. J. Howell Way, Waynesville
1927.....Mrs. R. S. McGeachy, Kinston
1928.....Mrs. B. J. Lawrence, Raleigh
1929.....Mrs. A. B. Holmes, Fairmont
1930.....Mrs. J. H. Macon, Warrenton
1931.....Mrs. W. B. Murphy, Snow Hill
1932.....Mrs. R. S. McGeachy, Greenville
1933.....Mrs. W. P. Knight, Greensboro
1934.....Mrs. J. W. Huston, Asheville
1935.....Mrs. J. Buren Sidbury, Wilmington
1936.....Mrs. C. P. Eldridge, Raleigh
1937.....Mrs. J. R. Terry, Lexington
1938.....Mrs. W. T. Rainey, Fayetteville

MINUTES OF THE EXECUTIVE BOARD OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

The fall meeting of the Executive Board of the Woman's Auxiliary to the Medical Society was held November 12, 1937, at the home of Mrs. P. P. McCain with fourteen present. After a delicious luncheon served by the hostess, the meeting was called to order by the President, Mrs. Rainey.

The first order of business was a call for a report of the officers of the Auxiliary. In the absence of the various officers the following reports were given:

Report from Mrs. Holmes enclosing $17.20. This being the amount recovered from the (closed) Fairmont Bank. Message was received that Mrs. Terry has been confined to the hospital for an operation. By direction of the President, flowers were sent by the members of the Auxiliary. It was also reported that Mrs. McGeachey is confined to her room as a result of a recent fall. Report read by Mrs. McCain. The bed had been occupied by three patients, at present by Miss Bertie Teague, Marshall, N. C. (Age 20).

Report was made that four persons were using the Educational funds.

Reports of the Councilors were then called for. Mrs. Strosnider responded by asking that the aims and purposes of the Auxiliary be stressed in the approach for members.

The President announced the formation of a Program Committee with Mrs. Taylor of High Point, Chairman. Other members, Mrs. P. P. McCain and Mrs. W. P. Knight. Mrs. Taylor suggested that the members of the Auxiliary call attention to the various programs being given over the radio concerning health and hygiene.

The President stressed that "Doctor's Day," which comes on March 30, be remembered in each community.

Letter from Mrs. Bier requesting an exhibit from our state to the National Organization: This matter referred to a Committee as follows: Mrs. Thomas, Chairman, and Sanatorium doctors' wives who discussed the following projects being used, "Student Loan Fund," "Hospital Bed" and "Endowment Fund."

The following subjects under new business were discussed:

Form of entertainment for State Convention.

Prizes for Membership: Mrs. Rainey offered $5.00 to the District giving the most for Endowment of the Hospital Bed.

Mrs. McCain offered $5.00 to the District giving the most for the up-keep of the bed. Percentage to be worked out by the Committee.

Election of members of the Nominating Committee as follows: Mrs. McGeachey, Chairman, Mrs. Hege, Mrs. Houston, Mrs. Grady Dixon, and Mrs. Terry.

Election of delegates to the Southern Medical Association: Mrs. Cooper named as delegate.

Mrs. Verne Caviness was elected Councilor for the Sixth District.

Date for the Spring Board Meeting to be held in Fayetteville, was set for the first week in March.

Attention of all members was called, that all membership dues should be mailed to Mrs. Judd of Raleigh, who is State Treasurer.

There being no further business, the meeting adjourned.

Mrs. Geo. W. Mitchell, *Secretary.*

MINUTES OF THE EXECUTIVE BOARD OF THE WOMAN'S AUXILIARY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

The Executive Board of the Woman's Auxiliary met, Wednesday, March 9, 1938, with Mrs. W. T. Rainey at her home in Feyetteville.

The meeting was called to order by the President, Mrs. Rainey. The reading of the minutes was dispensed with since a copy had been sent to all members of the Board.

The President read a letter from Mrs. Terry thanking the Auxiliary for the flowers she received.

Mrs. Judd, Treasurer, reported a balance of $387.33 in Student Loan Fund, $768.54 in McCain Endowment Fund and $180.67 in Bed Up-keep Fund.

Reports were given from the following Councillors: Mrs. Caviness, sixth district; Mrs. Houser, seventh district; Mrs. Matheson, fifth district. The president read the reports of Mrs. Knight, eighth district, and Mrs. Hedrick, ninth district.

Mrs. Judd asked consent for ordering membership cards. Mrs. Sidbury made a motion to have a rubber stamp made to stamp the date of expiration on membership cards.

Mrs. Yoder moved that the Auxiliaries giving the most to the bed fund (endowment and up-keep) be given the prizes offered. Mrs. Yoder made her reports on magazines. It was stressed that we sell *Hygeia* since we make the largest percent on it.

Mrs. Cooper asked for suggestions on research. It was decided to leave the subject to Mrs. Cooper.

The President asked that "Doctor's Day," March 30, be stressed. Mrs. Sidbury suggested that papers be read on the lives of noted doctors or that the Auxiliaries entertain husbands in some way since this is the purpose of "Doctor's Day."

Mrs. Taylor made her report for the Program Committee. Mrs. Judd moved and Mrs. Taylor seconded, that we invite the National Auxiliary President, Mrs. Augustus Kech, to the State Meeting.

Mrs. Sidbury suggested that the President offer the Auxiliary's co-operation and services to the Board of Health for the Children's May Day program.

The meeting adjourned for lunch.

The meeting was called to order by the President. After a lengthy discussion, a motion was made by Mrs. Judd and seconded by Mrs. Barefoot that the entertaining at the State meeting be left entirely to the committee in charge.

Mrs. Sidbury, Chairman of the Committee for Revision of By-Laws, explained the use and reason for constitution and by-laws of the Auxiliary. After reading and discussing the constitution it was moved by Mrs. Taylor that we accept the national constitution and abide by the State Auxiliary's By-Laws. It was moved by Mrs. Yoder and seconded by Mrs. Taylor that we leave it to this Committee for a final report on the constitution and by-laws at the State Meeting.

Mrs. Hege reported for the nominating committee.

The President asked that the Memorial Services be kept in mind and names be sent to Mrs. Manning.

There being no further business the meeting adjourned.

Mrs. C. D. Thomas, *Corresponding Secretary.*

STATE CONVENTION

Pinehurst, N. C.

Ladies Entertainment Committee

Mrs. C. D. Thomas, *Chairman*
Mrs. J. S. Denholm,
Mrs. F. T. Harper,
Mrs. L. B. Skeen,
Mrs. P. J. Chester,
Mrs. J. S. Milliken,
Mrs. W. E. Overcash,
Mrs. John Symington.
Mrs. R. A. Matheson,
Mrs. G. C. Godwin,
Mrs. P. P. McCain,
Mrs. H. E. Bowman,
Mrs. R. L. Felton, Jr.
Mrs. W. C. Mudgett,
Mrs. F. L. Owens,
Mrs. Greer Stutz.

Information for Ladies

(1) Register on arrival and receive badge. Registration fee of $1.00 is charged for all who do not present 1937-1938 membership cards.

(2) Wear badge to all functions and register for all entertainment.

(3) Volunteer cars for Tuesday afternoon and Wednesday morning.

Monday, May 2

3:00 p.m.—Bridge (Ladies' card room).
4:45 p.m.—Tea (Ladies' card room).
8:30 p.m.—Keno Party (Pine Room).

Tuesday, May 3

9:00 a.m.—Opening Session, Medical Society of the State of North Carolina. President's Address, W. M. Johnson, M.D., Winston-Salem.
10:00 a.m.—Auxiliary Executive Board meeting (Men's Card Room).
11:00 a.m.—Auxiliary Meeting (Men's Card Room).
3:00 p.m.—Drive to Southern Pines (Volunteer cars).
4:00 p.m.—Tea at Southern Pines Country Club (favors).
9:00 p.m.—President's Reception and Sixteenth annual Medical Society Ball (Ballroom).

Wednesday, May 4

9:00 a.m.—Drive to Jug Town (volunteer cars).
3:00 p.m.—Theatre Party, Carolina Theatre, Pinehurst, N. C. (Guests of Carolina Theatre).

Program Tuesday, May 3, 10:00 a.m.
(Men's Card Room)

Call to Order—Mrs. W. T. Rainey, *President.*
Lord's Prayer.
Greetings—Mrs. W. E. Overcash.
Response—Mrs. K. B. Pace.
Memorial Service—Mrs. Isaac H. Manning.

BUSINESS SESSION

Report of Secretary—Mrs. Geo W. Mitchell.
Report of Treasurer—Mrs. E. C. Judd.
Report of Chairman of Organization Committee—Mrs. J. R. Terry.
Report of Chairman of McCain Bed Fund—Mrs. J. B. Sidbury.
Report of Chairman of Loan Fund—Mrs. J. A. Keiger.
Report of Southern Medical—Mrs. G. M. Cooper.
Greetings from the Medical Society—Wingate M. Johnson, M.D.
Report of Standing Committees
  Hygeia—Mrs. P. A. Yoder.
  Historian—Mrs. Erick Bell.
  Scrapbook—Mrs. C. H. McCants.
  Fane Todd Crawford—Mrs. R. S. McGeachy.
  Research—Mrs. G. M. Cooper.
  Program—Mrs. Frederick R. Taylor.
  Poster—Mrs. C. D. Thomas.
  President's Report—Mrs. W. T. Rainey.
  Report of Courtesy Committee } Mrs. J. Roy Hege, *Chairman.*
  Report of Nominating Committee }
Election of Officers.
  Installation of Officers—Mrs. P. P. McCain.
  Announcements—Mrs. J. A. Elliott, Incoming President.
Adjournment.

GREETINGS

BY MRS. W. E. OVERCASH

Madam President, Ladies of the Auxiliary to the Medical Society of the State of North Carolina:

It gives us great pleasure to welcome you back to Pinehurst. Many of you, no doubt, have been here before, but to those who are here for the first time, we extend a special invitation to explore the beauties of the "Sandhills."

This meeting together each year to renew old Acquaintances and to make new ones in the profession serves not only as a pleasant social gathering but also as an opportunity to plan some service for the betterment of mankind and the alleviation of suffering. Were it not for this service to others there could scarcely be any excuse for our existence as an organization.

Plans have been made to make your stay here a pleasant one. However, many of you may have seen some of the things we plan to show you. But if there is anything else that you would like to see or do if you will only let us know, we will endeavor to arrange it for you. Possibly you would like a game of golf, or a game of tennis; or even horseback riding may appeal to you. Then, too, a night club might be found if

you are interested. It is the sincere hope of the members of the Auxiliary from Moore and Hoke Counties that your attendance at this meeting will bring as much pleasure to you as your presence here is bringing to us. If it does, then surely you will come again soon, both as an organization and individually.

RESPONSE

By Mrs. K. B. Pace

Madame President and Mrs. Overcash:

To say that the members of the Auxiliary are delighted to be here feebly expresses our feelings.

From the very moment we crossed into your Hoke and Moore counties the sun seemed brighter and the air lighter. Nothing that could possibly add to our happiness and comfort has been left undone.

As I notice everyone so thoroughly enjoying themselves I am reminded of a story of a minister who when entertained in the home of one of his members, seemed to have such a good time. The hostess asked him why he did not come more often. The minister with a twinkle in his eyes said, "Why don't you invite me? I come every time I am invited." —and so . . . we come in great numbers when we are invited here. We are happy to be here and we do appreciate the many lovely courtesies shown us.

MEMORIAL SERVICE

Mrs. Isaac A. Manning

The passing of our great friend Dr. McBrayer has left in our hearts an irreparable loss, so before beginning our Auxiliary Memorial Service, we will rise for a moment of silent meditation on his enduring services to us and in loving remembrance.

God giveth his beloved sleep. "Come unto me" saith he, "and rest!" His gentle summons to that mansion not made with hands eternal in the heavens came to

MRS. W. H. COBB OF GOLDSBORO
MRS. JAMES SPRUNT HALL OF WILMINGTON
MRS. J. S. SLATE OF WINSTON-SALEM
MRS. J. T. BENBOW OF WINSTON-SALEM
MRS. ROSS S. McELWEE OF STATESVILLE
MRS. W. A. BRADSHAW, ROXBORO

To us He said, "I will turn their mourning into joy and will comfort them and make them rejoice from their sorrow."

"I am the resurrection and the life; he that believeth in me though he were dead, yet shall he live; and whosoever liveth and believeth in me shall never die."

And now, Lord, what is my hope; truly my hope is ever in Thee. I know that my Redeemer liveth. I hear a voice from heaven, saying

unto me, "From henceforth blessed are the dead who die in the Lord;" even so saith the Spirit; for they rest from their labors.

Let us pray.

O, Lord Jesus Christ, who by thy death didst take away the sting of death; grant unto us they servants, so to follow in faith where thou hast led the way, that we may at length fall asleep peacefully in thee and awake after thy likeness; through thy mercy, who livest with the Father and the Holy Spirit, one God, world without end, and say as he bade us say:

Our Father who art in heaven, Hallowed be thy name, Thy Kingdom come, Thy will be done on earth, as it is in heaven. Give us this day, our daily bread and forgive us our trespasses as we forgive those who trespass against us, and lead us not into temptation, but deliver us from evil. For thine is the Kingdom, the power and the glory, forever and ever, Amen.

The Lord gave and the Lord hath taken away. Blessed be the name of the Lord.

"Hark! the sound of holy voices,
Chanting at the crystal sea,
Allehuia, allehuia,
Allehuia, Lord to Thee,
Multitude which none can number,
Like the stars in glory stands,
Clothed in white apparel, holding,
Palms of victory in their hands."
Now they reign in heavenly glory,
Now they walk in golden light,
Now they drink, as from a river,
Holy bliss and infinite;
Love and peace they taste forever,
and all truth and knowledge see,
In the beautic vision
Of the blessed Trinity.

Father in thy gracious keeping
Leave we now Thy servant sleeping.

TREASURER'S REPORT

Mrs. E. Clarence Judd, Raleigh

Receipts and Disbursements, May 20, 1937 to May 20, 1938

Balance on Deposit May 20, 1937, McCain Bed Fund (upkeep)	$267.03	
Balance on Deposit May 20, 1937, General Expense Fund	95.36	
Dues from 16 members (1937-1938)	16.00	
		$ 378.39
Dues from 378 members 1937-1938 (127 of these at large)		378.00

McCAIN BED FUNDS

Upkeep of Bed Fund

Balance on Deposit May 20, 1937	$267.03	
Received from Wake County Aux.	50.00	
Received from a Friend	1.75	
One-half of 394 dues	197.00	
		$ 515.78

McCain Endowment Fund

Balance on Deposit May 20, 1937	$746.11	
Received from Mrs. S. Douglas Craig	100.00	
Received from Fifth District (Dividends on Cumberland Nat. Bank)	19.66	
Received from Mrs. Paul Yoder, Hygeia Commissions	35.08	
Received from New Hanover County Auxiliary	88.50	
Received from Wake County Auxiliary	25.00	
Received from Dr. W. H. Cobb, Goldsboro	25.00	
Received from Dr. David Pollock	1.00	
Received from Mrs. W. W. Johnston	1.00	
Prize given by Mrs. P. P. McCain to auxiliary making largest contribution to this Fund	5.00	
Prize given by Mrs. W. T. Rainey for largest total contribution	5.00	
Interest on Savings	12.90	
		$1,064.25
Paid Nat. Tax		.19
Balance in Bank May 20, 1938		$1,064.06

Student Loan Fund

Balance on Deposit May 20, 1937	$383.50	
Received from Wake County Auxiliary	15.00	
Received from Guilford County Auxiliary	15.00	
Received from Miss Margaret Knight (payment on loan)	25.00	
Interest on money in Bank	7.69	
		$ 446.19
June 8, 1936, Loan to Miss Margaret Knight $60 ($25 Paid)	$ 35.00	
October 16, 1936 Loan to Miss Margaret Knight	140.00	
September 15, 1936 Loan to Miss Eula Grace Whittington	200.00	
February 10, 1937 Loan to Miss Margaret Whittington	100.00	
		$ 475.00
Balance in Bank May 20, 1938		446.19

Disbursements

Dues to American Medical Auxiliary for 267 members at 25c each	$ 66.75

To Burkhead-DeVane for printing	$ 11.20	
To Mrs. W. T. Rainey (President) for office expenses	10.00	
To Edwards and Broughton for 1,000 membership cards	6.50	
To Sunny Side Floral Nursery	5.15	
To Mrs. C. D. Thomas for cost of Poster	5.00	
To Mrs. E. Clarence Judd (Treasurer) for postage	5.45	
To Edwards and Broughton for printing	14.60	
To N. C. Sanatorium for treatment and board for patients 17 months	260.92	
Nat. Tax	.26	
		$ 385.83
Upkeep of Bed Fund	$515.78	
Expense for patients 1937-1938	260.92	
		254.86
General Expense Fund	$292.36	
General Expenses for 1937-1938	124.91	
		167.45
Balance on Deposit Loan Fund		446.19
Loans		475.00
Balance on Deposit, McCain Endowment Fund		1,064.06
Three members dues for 1939		3.00
		$2,410.56

Respectfully submitted,
MRS. E. CLARENCE JUDD, *Treasurer.*

McCAIN ENDOWMENT FUND

MRS. J. BUREN SIDBURY, *Chairman*

Balance on Deposit May 20, 1937	$746.11	
Received from Mrs. S. Douglas Craig	100.00	
Received from Fifth District (Dividends on Cumberland National Bank	19.66	
Received from Mrs. Paul Yoder, Hygeia Commissions	35.08	
Received from New Hanover County Auxiliary	88.50	
Received from Wake County Auxiliary	25.00	
Received from Dr. W. H. Cobb, Goldsboro	25.00	
Received from Dr. David Pollock	1.00	
Received from Mrs. W. W. Johnston	1.00	
Prize given by Mrs. P. P. McCain to auxiliary making largest contribution to this Fund	5.00	
Prize given by Mrs. W. T. Rainey for largest total contribution	5.00	
Interest on Savings	12.90	
		$1,064.25
Paid Nat. Tax		.19
Balance in Bank May 20, 1938		$1,064.06

STUDENT LOAN FUND

MRS. JAMES A. KEIGER, *Chairman*

Balance on Deposit May 20, 1937	$383.50	
Received from Wake County Auxiliary	15.00	
Received from Guilford County Auxiliary	15.00	
Received from Miss Margaret Knight (payment on loan)	25.00	
Interest on money in Bank	7.69	
		$ 446.19
June 8, 1936 Loan to Miss Margaret Knight, $60.00 ($25 Paid)	$ 35.00	
October 16, 1936 Loan to Miss Margaret Knight	140.00	
September 15, 1936 Loan to Miss Eula Grace Whittington	200.00	
February 10, 1937 Loan to Miss Margaret Whittington	100.00	
		$ 475.00
Balance in Bank May 20, 1938		$ 446.19

REPORT OF *HYGEIA* CHAIRMAN

Your Chairman has sent in to *Hygeia* for the State, twenty-four one-year subscriptions. The commission amounting to $30.00, was turned over to Mrs. J. B. Sidbury to be applied to the McCain Bed Endowment Fund.

Counties sending in subscriptions were: New Hanover 1, Caldwell 10, and Forsyth 13.

Commission from eight magazine subscriptions sent Publishers amounted to $5.08. This amount also applied to McCain Bed Endowment Fund.

Counties sending in magazine subscriptions were Cumberland 1, Moore 1, New Hanover 1, Hoke 5, total commission received $35.00.

Respectfully submitted,
EVELYN D. YODER.

REPORT OF FIRST DISTRICT

Bertie, Chowan, Perquimans, Currituck, Gates, Hertford, Northampton, Pasquotank, Camden, and Dare counties. Sent out letters asking for memberships, seven replies were received—not organized.

MRS. T. L. CARTER, *Councilor.*

REPORT OF SECOND DISTRICT

Beaufort, Carteret, Craven, Hyde, Jones, Lenoir, Martin, Pitt, Pamlico, Washington, and Tyrrell counties: Have not attended any of Executive Luncheons. Have written seventy letters and have received eight memberships.

Respectfully submitted,
LOUISE F. BEASLEY, *Councilor.*

REPORT OF THIRD DISTRICT

Bladen, Brunswick, Columbus, Duplin, New Hanover, Onslow, Pender, and Sampson counties:

August 6, the Auxiliary to the New Hanover County Medical Society entertained the wives of the doctors of the third district at Wrightsville Beach. There were twenty-five ladies present. Dinner was served, and bridge played at the Cape Fear Country Club Annex.

The New Hanover County Auxiliary had a benefit bridge party on April 30. From this party, $70.50 was cleared for the McCain Bed fund.

Respectfully submitted,

ELIZABETH M. BAREFOOT, *Councilor.*

REPORT OF FOURTH DISTRICT

Edgecombe, Greene, Halifax, Johnston, Nash, Wayne, and Wilson counties:

1. Method of contact: Letters, telephone calls, personal visits.

2. Results: Mrs. McGeachy, Weldon, 23 members; Mrs. Powell, Rocky Mount, no report; Mrs. Mitchell Wilson, 14 members, 100 per cent; Mrs. W. H. Smith, Goldsboro, and Snow Hill, 19 members. Total, 56 members.

McCain Endowment Fund received $25.00 in memory of Mrs. W. H. Cobb, of Goldsboro. Mrs. Cobb served as councilor for the fourth district, and loved this work. It is hoped this fund started in Mrs. Cobb's memory will grow year by year.

Respectfully submitted,

ANNA L. STROSNIDER, *Councilor.*

REPORT OF THE FIFTH DISTRICT

Chatham, Cumberland, Harnett, Hoke, Lee, Moore, Richmond, Robeson, and Scotland counties:

Have written a doctor's wife in each of the nine counties. Hoke County was the first county in the state to pay dues 100 per cent.

Mrs. Holmes of Robeson reports the auxiliary meets three times a year in different towns in the county. *Hygeia Magazine* was put in every school library in the county (six in all). Our state dues were paid, and we had a delegate at district and state meetings.

I have attended the two executive board meetings. We had one district meeting at Sanatorium, which was fairly well attended.

Respectfully submitted,

MURRIEL S. MATHESON, *Councilor.*

REPORT OF SIXTH DISTRICT

Alamance, Caswell, Durham, Orange, Franklin, Granville, Person, Vance, Wake, and Warren counties.

Roxboro reported annual meeting in January. They have six members. At the meetings they have a formal program with informal discussion. They lost one member, Mrs. W. A. Bradshaw, by death.

We did not do as well here in Raleigh and Wake County as we did last year as to membership, but have a better financial report than previously. Our membership for this year is thirty-seven, and we cleared $94.00 on a dance which we gave on Washington's birthday. This money is to be proportioned to the Loan Fund, the Bed Fund, and the Endowment.

I have been so anxious to get the ladies of Durham County interested in our organization, but have not been able to do so at the present time.

Alice Webb Caviness, *Councilor.*

REPORT OF THE SEVENTH DISTRICT

Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Montgomery, Rutherford, Stanly, and Union counties:

I hereby submit the following report:

I attended the Seventh District Auxiliary meeting held in Shelby November 2, 1937. We had a very successful meeting.

I attended the organization meeting of the Cleveland County Auxiliary, January 24, 1938. The following officers were elected: President, Mrs. W. J. Lackey, Fallston; Vice President, Mrs. B. B. Matthews, Shelby; and Secretary and Treasurer, Mrs. Dwight Bridges, Lattimore.

Respectfully submitted,

Mrs. F. M. Houser, *Councilor.*

REPORT OF THE EIGHTH DISTRICT

Allegheny, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry, Wilkes, and Yadkin counties:

The eighth district has two organized auxiliaries and seven members at large. Total membership is 75. Forsyth County Auxiliary is only one year old, but as was predicted last year, is growing splendidly. They have 52 members, and have had two meetings, one in February to organize and one as guest of their husbands at a dinner with dancing following. Thirty-five dollars and eights cents has been sent to the Endowment Fund for the McCain Bed, that amount being collected from *Hygeia* subscriptions.

The Guilford County Auxiliary has only 16 members this year, but I am sure that before this report is in several more will have registered. They have four good and well attended meetings with an interesting

program at each meeting. Three of the meetings were dinner meetings, meeting the same night the doctors met, and one a lovely lunchon in High Point just bfore Christmas, when the members brought their lovely packages to be sent to our guest in the McCain Bed. Fifteen dollars was sent to our Student Loan Fund and $15.00 to the Bed Endowment Fund.

The Eighth District had a meeting in Greensboro April 26. The doctors' wives of Greensboro entertained the visiting ladies at a lovely tea. Afterwards the doctors and their wives had dinner together, and enjoyed the guest speaker.

We do trust that the unorganized counties in the Eighth District will make as their slogan for this coming year, "Let's Organize."

Respectfully submitted,
NELL H. KNIGHT.

REPORT OF THE NINTH DISTRICT

Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davis, Iredell, Alexander, Mitchell, Rowan, Watauga counties.

Our annual meeting was held in Hickory, September 30, 1937, in conjunction with the Ninth District Medical meeting. A short business meeting was held.

Our past president, Mrs. J. R. Terry of Lexington, gave an interesting report on the work of the State Auxiliary. Following the business meeting, the Hickory ladies entertained at the Hickory Country Club at bridge and a tea. At 6:30 o'clock, a joint banquet for the ladies and doctors was held with Dr. W. C. Love of Baltimore as guest speaker.

Activities of the District consist of a vase shower given for the benefit of the hospitals, a Thanksgiving basket for a doctor and family, and Doctors' Day, March 30, was observed by a joint dinner meeting with the doctors of the county. A weiner roast and card party was given for the nurses of the hospitals. Christmas cards were sent to the widows and disabled doctors.

Ten *Hygeia* subscriptions were sent from Caldwell County, which county also sent in dues 100 per cent.

Hickory has fifteen members.

Respectfully submitted,
MRS. CLYDE R. HEDRICK, *Councilor.*

REPORT OF THE TENTH DISTRICT

Buncombe, Cherokee, Haywood, Henderson, Jackson, McDowell, Macon, Clay, Madison, Polk, Swain, Graham, Transylvania, and Yancey counties.

No organization.

Respectfully submitted,
ORA JOHNSON.

GREETINGS TO THE AUXILIARY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Wingate M. Johnson, M.D., *President*
Medical Society of the Society of the State of North Carolina

In bringing to the Woman's Auxiliary the greetings of the North Carolina State Medical Society, my first thought is that it is my privilege to see in a group the bravest women in North Carolina. Only brave women would marry a doctor—certainly if she knew anything about the kind of life he leads. My wife once told me, when an outing we had long anticipated had to be abandoned at the last minute, "I suppose I would marry you over again, but I wouldn't marry any other doctor that ever lived!" And the tone of her voice left much doubt as to whether I would have had another chance if she were free again.

A veteran druggist once said that there wasn't any other animal in the world like a doctor: He had dealt with them all his life, and knew they were born outlaws. Undoubtedly the nature of a doctor's work, with its intense individualation, its disregard of conventions, its defiance of the very laws of health he preaches to others, does tend to make him somewhat of an outcast from polite society, with its well-ordered customs. It is unfortunate, however, that too often our wives have to share our outlaw life. Yet no man on earth needs a good wife more than a doctor. As Dr. Tom Davis said last month, in welcoming the wives of the Forsyth County doctors to our annual Ladies' Night dinner dance, the one word that describes our ladies is "Indispensable."

May I suggest five ways in which a doctor's wife is indispensable to him? The first is in saving for him. The old proverb, "Husbands can earn, but only wives can save," applies to doctors more than to any other class I know of. Only too often the best doctors are the poorest business men.

The second way in which a doctor depends upon his wife is for service: Not slavish devotion, but such thoughtful care as seeing that he gets decent food, even though literally, at all hours, keeping up with his telephone calls, and placating unreasonable patients who insist upon getting in touch at once with the doctor, possibly to ask if it is too soon after a cold to have a permanent wave. Another most important service a wife can render is that of constructive criticism—correcting her husband's mannerisms, his careless habits of dress, his—oh, what's the use of repeating what every woman knows?

The third important quality of a doctor's wife is that of secrecy. It has been said that doctors can talk about other doctors only to their wives—that is why most of them get married. While of course none of you gossip about your husbands' patients, it is inevitable that a doctor's wife must learn some things that should not be repeated. It becomes

second nature with her to keep these things to herself. Incidentally, there are two good reasons for a doctor not to form the habit of talking to his wife about his patients: (1) in so doing he is apt to violate a professional confidence; (2) it is best to leave professional problems, so far as possible, outside the door of the house.

The fourth attribute of the ideal doctor's wife is that of stimulating his professional ambition. By encouraging him to attend medical meetings, by suggesting that when he has had an unusually interesting or instructive case he report it to his medical journal, and by herself reading the medical news in the papers and asking for further information, such a wife may help her mate up the rungs of the professional ladder.

A fifth most helpful characteristic is sympathy. It may not occur to many people who have not lived in the house with one that doctors are the most human beings in the world. They get tired and discouraged, and often feel that life is flat, stale, and unprofitable. No real doctor ever gets to the point that it does not hurt to lose a patient, no matter how hopelessly sick. As Stephen Paget said, "Our successful cases . . . might belong to anybody; but our unsuccessful cases belong to us." At such times the good wife can herself practice the healing art by giving the support of her love and faith and encouragement. She should tell her husband that he is the best doctor in the community—or in the world—and that she knows he did all any one could have done to save his patient. An occasional "pep" talk from the wife helps more than she can imagine. Every man, even a doctor, has in him much of the child. He likes and often needs a little judicious mothering.

While Longfellow is not the world's best poet, with one exception his lines are peculiarly appropriate when applied to the doctor and his wife:

> "As unto the bow the cord is,
> So unto the man is woman.
> Though she bends him, she obeys him (the exception),
> Though she draws him, yet she follows,
> Useless each without the other."

PRESIDENT'S REPORT

As President of the Auxiliary to the Medical Society of the State of North Carolina, it is my privilege to present a summary of the work of the year 1937-1938. The progress made is due entirely to the harmonious work of our officers and members and their splendid coöperation.

Your Chairman of Organization has given you the report of the Councilors, lack of time prevents hearing from them individually although we would like to do so. The Councilors are very important to our organization, and give the necessary contacts needed between District and County Auxiliary. We are glad to welcome several new auxiliaries,

and to tell you that we now have a program chairman at your service. In one state attendance increased 30 per cent at an annual meeting after auxiliary organization, and the men reported a much better time.

Our Bed Fund is in splendid condition. The bills are paid and a balance is noted. The bed is occupied by Miss Bertie Teague of Marshall, who is twenty years of age, and is improving. It is a joy to have a part in this work, of restoring health to a young girl, and should make us all very happy.

Our McCain Bed Endowment Fund continues to grow. We hope in time to establish a sufficient amount to make the bed self-sustaining. Several contributions have been made to this fund, and appreciation is due the auxiliary members who have worked toward enlarging it.

The Student Loan Fund has also grown, and we have made loans to three doctors' daughters. There is a balance even though we have not reached our $10,000 goal set in 1930, however through the depression and recession we have been able to answer all calls made for loans. This has been possible because of interest shown by the members in this very worth while project.

The Treasurer's report is incomplete as dues are still coming in during the convention. We have heard enough to convince us that the life of the Treasurer is not an easy one, and we are very proud of her report.

Three Board Meetings have been held this year. In November a splendid meeting was held with our Organizing President, Mrs. P. P. McCain, at her home in Sanatorium. At the request of the National Officers a State Program Committee was appointed. We feel that this will be a great help especially to new auxiliaries who may need a center of information. A committee was appointed to prepare a suitable exhibit to be shown at the A.M.A. Convention in San Francisco. Prizes were offered to the auxiliaries contributing the largest amounts to the upkeep of the bed and Endowment Fund.

In March the board met with your President in Fayetteville. After reports were heard plans for an annual meeting were discussed. The National President, Mrs. Augustus S. Kech, was invited to attend the annual meeting at Pinehurst as guest speaker, but sent regrets as conflicting engagements kept her from attending. The President was instructed to write Mrs. J. Henry Highsmith offering assistance and cooperation with the child's May Day Health Program, sponsored by the State Board of Health. Mrs. Sidbury then discussed the revision of our by-laws passed by the board. Both meetings were well attended, and we derived much pleasure from the association, while transacting the business of the Society. Minutes of these meetings were sent to all absent members of the board.

Hygeia, the health magazine published by the A.M.A., is necessary to every well informed auxiliary member, yet subscriptions lag in

spite of our Chairman's tireless efforts. It is one of the best magazines to put on your High School Library table, and the commission from one subscription pays for one and a half days for our Sanatorium patient. To quote Mrs. Henry Raile, "Knock, knock, who's there?" "*Hygiea.*" "*Hygeia* who?" "*Hygeia* ever get along without it?" Please each of you try to get one subscription next year, and you will be surprised at the Treasurer's report. Caldwell County sent in ten subscriptions, and Forsyth County thirteen, the commission amounting to $30 on these.

Many physician's wives feel the responsibility in the field of Public Relations. The former State President of the Garden Club, of the P.-T.A., of the Summer Round-up, the Chairman of the Woman's Field Army for the Control of Cancer, and many other officers, including Church and political, are held by them. In birth control clinics your chance for influencing the future population of the country is more than interesting. A North Carolina woman wrote of her garden, and it also applies to this subject: "I wonder why the little weeds, the middle-sized, and tall ones, have such enormous families, and flowers have such small ones." (Edith Earnshaw.) One of our main objectives is to extend the aims of the medical profession to other organizations. We must not forget that first of all we are doctors' wives, and that our existence is not so much to be "aggressive as it is to be supportive," in extending these aims.

Our Advisory Board is our strong arm, and to them we shall always look for advice and council. "A famous woman newspaper correspondent spoke of the American Medical Association as 'the most distinguished lay group in America'." Such a compliment from a woman of wide experience is not to be taken lightly. If this is true of the group to which we are auxiliary, then we, the members of the auxiliary, should see that we, too, shall emulate dignity and prestige of this organization in all our work.

And so, is it any wonder that at last through the long ages of work and striving the doctor is set aside as one who walks on the high road? What should be the reaction of the doctor's wife to this elevated status that has been given her husband? Does she think of it as something to satisfy ambition for social prestige as expressed in a too full social calendar, and with values based on the snobbery of things that money can buy, or does this classification make her justly humble with the weight of her responsibility? (Mrs. David S. Long.)

Because of this elevated status the physicians's wife can do an immense amount of good along the lines of social service. In this time of relief work and workers the opportunities are unlimited to intercede in many instances or perhaps in a quiet way see that the deserving are given like advantages with the undeserving, whom we all know never seem to lack free aid.

Perhaps you know of cases who should be given mother's aid which

is one of our wonderful blessings in North Carolina, and it is surprising how many needy mothers do not know of this opportunity. To see that proper sanitary measures are enforced in our public schools. It is not necessary to tell our group that all we can do in our schools along this line is not enough.

During the year your President has written several hundred letters and cards, sent a report to the National Fall Board meeting, written several articles by request, one News Letter, and turned into a scribe generally. It has been a joy to do this for every single person asked to do some special service has graciously accepted, and offered to do anything else necessary.

Again let me thank all the Officers, Councilors, Chairmen, and the entire committees who have given their time and support so graciously, and express to all of you my appreciation for the honor and pleasure of serving you.

Respectfully submitted,
Mrs. W. T. Rainey, *President,*

HISTORIAN'S REPORT

Mailed in historical report to the Historian of the Woman's Auxiliary to the Southern Medical Society in October.

Attended board meeting at Sanatorium in November.

In March report of 1936-1937 up to January 1938, was sent Historian of the Woman's Auxiliary to the American Medical Association.

Summary of year's work was also sent upon request to the National Archives Committee in Chicago, Ill.

Three copies of history made. A copy sent to Mrs. Rainey, President; Mrs. C. H. McCants, Scrapbook Chairman; the third copy to be given to successor of present historian.

Respectfully submitted
Mrs. Erick Bell, *Historian.*

CHAIRMAN OF HEALTH EDUCATION REPORT

Having lived for the past twenty-five years in an atmosphere of preventive medicine, I am amazed on looking back even for that time and noting the changes which have been made in living conditions for so many people. Twenty-five years ago, typhoid fever at this time of year practically existed in every county in the state. Think of the difference in that situation now. During the past week, there was only one case reported to the State Board of Raleigh in all the State of North Carolina for a whole week.

Going back a little further, it is interesting to note that 44 years ago in March, the *State Health Bulletin* published the account of a visit of a group of physicians and their wives interested in health work who had

visited in the state the month before. This group was composed of such physicians as the Editor of *New England Medical Monthly,* the *Sanitarian,* published in Boston, and other equally well known publications of the time. Their description of their trip by train to Henderson, Charlotte, Wilmington, and Southern Pines was simply glowing. On their return to the North, the Editor of the *New York Polyclinic* stated that their trip was pleasant, and they found all the places they visited delightful, but that Southern Pines was a special health resort, and one of the loveliest places they had ever seen, all of which holds good today.

In the issue of the *Health Bulletin,* April 1894—44 years ago last month—we read that Dr. Lewis was writing the doctors of the state expressing his firm conviction that "Malarial Diseases were introduced into the system in many, if not most cases, through the medium of the drinking water." Today we know that malaria is introduced into the system through the bite of a certain kind of mosquito, and in no other way. At the same time, we know that Dr. Lewis' agitation for clean, pure drinking water, as brought about through the work of the late Dr. Shore and of other officials of the State Board of Health, has resulted in saving a large number of lives from typhoid fever. Thus, Dr. Lewis was not altogether wrong. He simply was mixed in his fevers, but the information he spread throughout the state as to the needs for health work have been one of the foundations upon which the present health system in North Carolina is set up. Mrs. G. M. Cooper, Raleigh, N. C.

REPORT OF THE COURTESY COMMITTEE

Madam President, in behalf of our Auxiliary, I want to thank our hostesses for the lovely time they are giving us. We have already enjoyed two delightful parties, and are looking forward to the tea this afternoon, the ball tonight, and the trip to Jugtown and movies tomorrow. We all love to come to Pinehurst. It seems you have everything to make this an ideal convention headquarters. We love the luxurious atmosphere, we find here—the quiet beauty of the landscape, and the friendly feeling of cordiality that is extended to us.

We are indeed happy to be here today and enjoy the many things you have planned. We especially want to say to your most capable chairman, Mrs. Thomas, and her committee, "We thank you!"

Our hearts are filled with gratitude and appreciation for giving us these three days of pleasure, entertainment, and inspiration.

(Mrs. J. Roy) Helen W. Hege.

REPORT OF THE NOMINATING COMMITTEE

President, Mrs. J. A. Elliott, Charlotte, N. C.
President-elect, Mrs. C. T. Strosnider, Goldsboro, N. C.
First Vice President, Mrs. W. T. Rainey, Fayetteville, N. C.

Second Vice President, Mrs. Alfred E. Kent, Granite Falls, N. C.
Third Vice President, Mrs. R. A. Moore, Winston-Salem, N. C.
Recording Secretary, Mrs. R. E. Fox, Raleigh, N. C.
Corresponding Secretary, Mrs. Harry Winkler, Charlotte, N. C.
Treasurer, Mrs. E. Clarence Judd, Raleigh, N. C.
Chairman of Board of Past Presidents, Mrs. P. P. McCain, Sanatorium, N. C.

NOMINATING COMMITTEE

Mrs. R. S. McGeachy,
Mrs. J. R. Terry,
Mrs. J. W. Houstin,
Mrs. A. A. Dixon,
Mrs. J. Roy Hege, *Chairman.*

REPORT OF THE PROGRAM COMMITTEE

The Chairman of your Program Committee has kept in touch with our National Chairman, and has distributed all materials sent out from the A.M.A., answered all inquiries, and offered suggestions for program materials, and has also read a paper to a large group of students and teachers on the evil effects of marihuana.

Your committee would like to suggest to all members that *Hygeia* be used for health program material.

Respectfully submitted,
Mrs. Frederick R. Taylor, *Chairman.*

REPORT OF PRESIDENT-ELECT

As your President-elect, through the past year, I have been completely carefree, but this morning the weight of the new office, your presidency, is making me feel its responsibility and its importance. I appreciate very much this honor, and ask your understanding, and your continued coöperation. I pledge you mine. Mrs. J. A. Elliott.

BY-LAWS
of
THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

PREAMBLE

The Auxiliary to the Medical Society of the State of North Carolina shall be guided in all its activities by the Medical Society of the State of North Carolina, through an Advisory Committee appointed by the Executive Committee of the Medical Society of the State of North Carolina.

ARTICLE I

SECTION 1. *Name.* The name of this organization shall be the Auxiliary to the Medical Society of the State of North Carolina, a branch of the Woman's Auxiliary to the American Medical Association.

ARTICLE II

SECTION 1. *Objects.* The objects of this organization shall be to interpret the aims of the medical profession to other organizations interested in the promotion of health education; to assist in the entertainment at the meetings of the Medical Society of the State of North Carolina; to promote friendliness among the families of the medical profession; and to do such work as may be approved from time to time by the Advisory Committee appointed by the Medical Society of the State of North Carolina.

ARTICLE III

Membership and Dues

SECTION 1. Membership in the Auxiliary shall be composed of the wives and widows of members of the State Medical Society.

SEC. 2. Honorary membership may be conferred by unanimous vote of those present at the annual meeting.

SEC. 3. The annual dues shall be one dollar ($1.00).

ARTICLE IV

Officers and their Election

SECTION 1. The officers of this Auxiliary shall be a president, president-elect, three vice presidents, a recording secretary, a corresponding secretary, and a treasurer. The organizing president of the Auxiliary shall be called the Honorary President for Life and shall have all the privileges of an elected officer.

SEC. 2. These officers shall be elected annually, with the exception of the first vice president, the corresponding secretary, and the Honorary President. The outgoing president automatically shall become the first vice president and the incoming president shall appoint the corresponding secretary for her term of office. A majority vote shall constitute an election.

SEC. 3. There shall be a Nominating Committee consisting of five members, no two of whom shall come from the same district. The president shall ap-

point the chairman. The other members shall be elected by the Board of Directors at the Fall meeting.

SEC. 4. The Nominating Committee shall obtain the consent of all nominees to serve before presenting their names. Nominations shall be permitted from the floor.

SEC. 5. No officer, except the treasurer, shall be eligible for more than two consecutive terms in the same office.

SEC. 6. A vacancy occurring in an office shall be filled by the Executive Committee. The vote may be taken by mail.

ARTICLE V

Duties of Officers

SEC. 1. (a) The president shall preside at all meetings of the Auxiliary of the Executive Committee, and of the Board of Directors. She may call special meetings of the Executive Committee or of the Board of Directors and shall appoint chairmen of standing committees and of all special committees. She shall be, ex-officio, a member of all committees except the nominating committee.

(b) The president shall countersign all orders on the treasury and shall have general supervision of all affairs of the Auxiliary.

(c) The president shall appoint chairmen of standing committees for her term of office only.

(d) The president, as chairman of the Board of Directors, shall present its annual report and other business of importance to the Auxiliary at the Annual Meeting.

SEC. 2. The President-elect shall act as aide to the president, performing all duties assigned by the president.

SEC. 3. The first vice president shall act as aide to the president, and in the absence of the president, shall perform all the duties of the office. She shall serve as chairman of Organization having direct supervision of the work of the Councillors.

SEC. 4. The second vice president shall serve as chairman of the McCain Bed at Sanatorium. It shall be her duty to interest the membership in contributing to the upkeep and endowment of this bed.

SEC. 5. The third vice president shall be in charge of the Auxiliary Loan Fund. It shall be her duty to interest the membership in contributing to this fund.

SEC. 6. The Recording Secretary shall keep in permanent form the minutes of the Auxiliary, the Executive Committee, and the Board of Directors, and shall notify all officers of their election and chairmen of committees of their appointment.

SEC. 7. The treasurer shall be custodian of the funds of the Auxiliary. She shall disburse them upon written order of the president, who shall be guided by the Finance Committee as to advisability of expenditures. She shall make an annual report which has been audited by a certified accountant.

SEC. 8. The Corresponding secretary shall conduct such correspondence as may be assigned to her by the president.

ARTICLE VI

Meetings

SECTION 1. The annual meeting of the Auxiliary shall be held at the same time and place as that of the Medical Society of the State of North Carolina.

ARTICLE VII

Finances

SECTION 1. There shall be a Finance Committee consisting of the treasurer, who by virtue of her office shall serve as chairman, the president-elect, and the first vice president which shall act in an advisory capacity in all transactions involving the expenditure of funds. Any suggestions for starting new projects must first be approved by this committee, and the Advisory Committee, and then voted upon at an annual meeting.

SEC. 2. The proceeds from the receipt of dues shall be used to pay the National Auxiliary dues and the expenses of the State Auxiliary; one-half of the proceeds from each membership shall be kept in a separate account for the McCain Bed upkeep. At the end of each year one-half of the amount left in the treasury over and above the amount spent on the McCain Bed the preceding year shall be placed in the Endowment Fund.

SEC. 3. Officers and chairmen whose work has necessitated the expenditure of money during the year shall present an itemized statement of such expenditures to the treasurer one month prior to the annual meeting.

SEC. 4. The treasurer shall close her books after the annual meeting and shall have them ready to turn over to her successor at the beginning of the month following the annual meeting.

ARTICLE VIII

Executive Committee

SECTION 1. The Executive Committee shall consist of the duly elected officers and the organizing president.

SEC. 2. The Executive Committee shall perform the duties of the Board of Directors between meetings of the Board, shall act in emergencies, and shall transact all business referred to it by the Board.

ARTICLE IX

Board of Directors

SECTION 1. The Board of Directors shall consist of the members of the Executive Committee, the Councilors and the chairmen of all committees.

SEC. 2. The management and control of the Auxiliary between its annual meetings shall be vested in a Board of Directors which shall meet before the annual meeting each year and in the fall of the year at the call of the president, but preferably in October.

ARTICLE X

McCain Bed

SECTION 1. The members of this Auxiliary shall have as their major project the upkeep of the McCain Bed at Sanatorium.

SEC. 2. Doctors and the members of doctors' families shall be given preference in choosing the occupants for this bed.

SEC. 3. Should no doctors' family need this bed it shall be used by any worthy person chosen by the committee.

ARTICLE XI

Auxiliary Loan Fund

SECTION 1. There shall be an Auxiliary Loan Fund, the proceeds of which shall be lent to the sons and daughters of doctors to be used in the junior and senior years of their academic college course and for post graduate courses. The recipient of the loan shall be permitted to designate the school he, or she, wishes to attend.

SEC. 2. No loans shall be made without the knowledge and consent of the Executive Committee and the Advisory Committee appointed by the State Medical Society.

SEC. 3. All notes given as security for a loan shall mature in three years. Interest at the rate of 3 per cent shall begin one year after maturity of the note.

ARTICLE XII

McCain Endowment Fund

SECTION 1. There shall be an endowment fund for the McCain Bed at Sanatorium which shall be kept in a separate account. All moneys given to the Auxiliary without specified destination shall be placed in this fund.

ARTICLE XIII

Councillors

SECTION 1. The number of Councillors shall correspond to those of the State Medical Society.

SEC. 2. Councillors may be elected by their districts or appointed by the Executive Committee. They shall have charge of the extension work in their respective districts, and shall serve for a term of three years.

ARTICLE XIV

Standing Committees

SECTION 1. Standing Committees may be created by the Board of Directors as they are needed to promote the work of the Auxiliary.

ARTICLE XV

Parliamentary Authority

SECTION 1. Roberts' rules of Order Revised shall be the Parliamentary authority for the Auxiliary to the Medical Society of the State of North Carolina.

ARTICLE XVI

Amendments

SECTION 1. These By-Laws may be amended at any annual meeting of the Auxiliary by a two-thirds vote of those present and voting.

CONVENTION MINUTES OF THE AUXILIARY

The Sixteenth Annual Meeting of the Auxiliary to the North Carolina Medical Society met in the Ladies' Card Room of the Carolina Hotel, Pinehurst, on Tuesday, May 3, 1938, at 11:00 o'clock.

The meeting was called to order by the President, Mrs. W. T. Rainey, and opened with the Lord's Prayer.

A committee was appointed to approve the minutes of the meeting.

Greetings of welcome were extended by Mrs. W. E. Overcash of Southern Pines. The response was given by Mrs. K. B. Pace of Greenville.

A most impressive memorial service was conducted by Mrs. Isaac H. Manning of Chapel Hill. A tribute was paid to Dr. L. B. McBrayer at this time.

Mrs. Strosnider presented to the McCain Endowment Fund for Dr. Donnell and W. H. Cobb of Goldsboro, $25.00 in loving memory of Mrs. W. H. Cobb.

The secretary, Mrs. Geo. Mitchell, gave the report of the Executive Board meeting, as follows: That a lifetime membership in the Auxiliary be given Mrs. P. P. McCain; that a hundred dollars be set aside for president's expenses for the coming year. The reading of the minutes was dispensed with, as they are published in this year's Transactions.

The President, Mrs. Rainey, presented to Mrs. P. P. McCain a corsage and lifetime membership as a token of love from the Auxiliary. Mrs. E. Clarence Judd, Treasurer, read her report, which was accepted, and Mrs. Judd was given a rising vote of thanks.

The following made reports:

Mrs. J. R. Terry, Chairman of Organization.
Mrs. J. B. Sidbury, Chairman of McCain Bed Fund.
Mrs. J. A. Keiger, Chairman of Student Loan Fund.
Mrs. J. B. Sidbury, on Southern Medical.
Mrs. C. F. Strosnider, on Southern Medical.
Mrs. Frederick Taylor, Chairman of Programs.
(Mrs. Thomas), for Mrs. C. H. McCants, Scrapbook.
Mrs. P. A. Yoder, Chairman of *Hygeia* Committee.
Mrs. Erick Bell, Historian.
Mrs. R. S. McGeachy, Chairman Jane Todd Memorial.
Mrs. G. M. Cooper, Chairman Research Committee.
Mrs. C. D. Thomas, Chairman Poster Committee.

All reports were accepted as a whole.

Dr. Wingate M. Johnson, President of the State Medical Society, brought greetings to the auxiliary. Mrs. G. C. Cook of Winston-Salem, and Mrs. M. L. Stevens, Asheville, were appointed delegates to the American Medical Association.

Mrs. S. D. Craig made a gift of $50.00 for the upkeep, and $50.00 for the endowment of the McCain Bed Fund.

The President, Mrs. Rainey, read her report, which was accepted, and she was given a rising vote of thanks.

Mrs. J. Roy Hege gave the report for the Courtesy and Nominating Committee, the following officers being nominated:

President, Mrs. J. A. Elliott, Charlotte, N. C.

President-elect, Mrs. C. T. Strosnider, Goldsboro, N. C.

First Vice President, Chairman of Organization, Mrs. W. T. Rainey, Fayetteville.

Second Vice President, Chairman of Bed Fund, Mrs. Alfred E. Kent, Granite Falls.

Third Vice President, Chairman of Student Loan Fund, Mrs. R. A. Moore, Winston-Salem, N. C.

Recording Secretary, Mrs. R. E. Fox, Raleigh, N. C.

Corresponding Secretary, Mrs. Harry Winkler, Charlotte, N. C.

Treasurer, Mrs. E. Clarence Judd, Raleigh, N. C.

Chairman of Board of Past Presidents, Mrs. P. P. McCain, Sanatorium, N. C.

The new officers were inducted into office with an impressive ceremony by Mrs. J. B. Sidbury.

The new President, Mrs. J. A. Elliott, then took the chair and called a meeting of her Executive Board for Tuesday night, May 3, at 7:30 o'clock.

Mrs. Thomas made an announcement regarding entertainment.

Mrs. Taylor urged that more attention be paid to Doctors' Day which comes March 30.

There being no further business, the meeting was declared adjourned.

Respectfully submitted,

(Mrs. Geo. W.) Irene W. Mitchell, *Recording Secretary.*

Approved by:

Mrs. H. D. Walker,
Mrs. Paul Yoder,
Mrs. O. L. Parker.

ROSTER OF MEMBERS

1937-1938

Abel, Mrs. J. F. ..... Waynesville
Adams, Mrs. C. N. ..... Winston-Salem
Alexander, Mrs. G. T. ..... Thomasville
Anders, Mrs. M. G. ..... Gastonia
Andrews, Mrs. J. M. ..... Lexington
Anthony, Mrs. W. A. ..... Gastonia
Ashby, Mrs. Edward C. ..... Mt. Airy
Ashworth, Mrs. W. C. ..... Greensboro
Avery, Mrs. E. S. ..... Winston-Salem
Aycock, Mrs. F. M. ..... Princeton
Baker, Mrs. H. M. ..... Lumberton
Barefoot, Mrs. Graham .... Wilmington
Bailey, Mrs. C. W. ..... Rocky Mount
Bandy, Mrs. W. G. ..... Lumberton
Barbee, Mrs. G. S. ..... Zebulon
Bardin, Mrs. R. M. ..... Rockinghom
Beam, Mrs. R. S. ..... Lumberton
Beam, Mrs. Hugh ..... Roxboro
Beasley, Mrs. E. B. ..... Fountain
Beckwith, Mrs. R. P. ... Roanoke Rapids
Beard, Mrs. G. C. ..... Wilmington
Belton, Mrs. J. F. ..... Princeton
Bell, Mrs. G. Erick ..... Wilson
Belvey, Mrs. H. B. ..... Goldsboro
Benson, Mrs. N. C. ..... Lumberton
Bizzell, Mrs. T. M. ..... Goldsboro
Bizzell, Mrs. M. E. ..... Goldsboro
Bittinger, Mrs. S. M. ..... Black Mt.
Black, Mrs. O. R. ..... Landis
Blackshear, Mrs. T. J. ..... Wilson
Bowers, Mrs. M. A. ..... Winston-Salem
Bowles, Mrs. Norman ..... Durham
Bowman, Mrs. H. E. ..... Aberdeen
Bowman, Mrs. J. W. ..... Aberdeen
Boyres, Mrs. R. H. ..... Hurdle Mills
Brewer, Mrs. J. Street ..... Roseboro
Britt, Mrs. J. N. ..... Lumberton
Bridges, Mrs. Dwight H. ..... Lattimore
Brockmann, Mrs. H. L. ..... High Point
Brooks, Mrs. E. B. ..... Winston-Salem
Brown, Mrs. J. A. ..... Fairmont
Brown, Mrs. G. W. ..... Raeford
Brown, Mrs. M. S. ..... Roanoke Rapids
Brown, Mrs. C. ..... Goldsboro
Buffaloe, Mrs. J. S. ..... Garner
Buie, Mrs. R. M. ..... Greensboro
Bulla, Mrs. A. C. ..... Raleigh
Bulluck, Mrs. Ernest S. ..... Wilmington
Buckanan, Mrs. L. T. ..... Laurinburg
Bunn, Mrs. R. W. ..... Enfield
Busby, Mrs. Julian ..... Kannapolis
Byerly, Mrs. W. G. ..... Statesville
Campbell, Mrs. A. C. ..... Raleigh
Cardwell, Mrs. W. ..... Greensboro
Carpenter, Mrs. C. C. ..... Wake Forest
Carpenter, Mrs. O. J. ..... Granite Falls
Carter, Mrs. T. L. ..... Gatesville
Cathell, Mrs. E. J. ..... Lexington
Caviness, Mrs. Verne S. ..... Raleigh
Caviness, Mrs. Z. M. ..... Raleigh
Chester, Mrs. J. J. ..... Aberdeen
Clark, Mrs. Badie ..... Wilson
Clyatt, Mrs. C. E. ..... Denton
Coble, Mrs. Donnell B. ..... Goldsboro
Coddington, Mrs. Herbert .. Wilmington
Coleman, Mrs. G. S. ..... Raleigh
Combs, Mrs. Fielding .... Winston-Salem
Cook, Mrs. G. C. ..... Winston-Salem
Cooper, Mrs. G. M. ..... Raleigh
Corbitt, Mrs. C. L. ..... Dunn
Cornwell, Mrs. Wm. S. ..... Charlotte
Covington, Mrs. J. M. ... Roanoke Rapids
Cozart, Mrs. W. S. ..... Fuquay Springs
Cranmer, Mrs. J. B. ..... Wilmington
Craig, Mrs. S. D. ..... Winston-Salem
Craven, Mrs. F. C. ..... Ashboro
Crispell, Mrs. R. S. ..... Durham
Croom, Mrs. J. D. ..... Maxton
Crouch, Mrs. A. McR. ..... Wilmington
Dalton, Mrs. W. N. ..... Winston-Salem
Dalton, Mrs. B. B. ..... Liberty
Davis, Mrs. Philip B. ..... High Point
Davis, Mrs. J. M. ..... Wadesboro
Dees, Mrs. Rigdon ..... Greensboro
Denholm, Mrs. Jack ..... Sanatorium
Dickinson, Mrs. K. D. ..... Raleigh
Dixon, Mrs. G. G. ..... Ayden
Drummond, Mrs. C. S. ... Winston-Salem
Dully, Mrs. Fred ..... Lenoir
Durham, Mrs. C. W. ..... Greensboro
Eldridge, Mrs. C. P. ..... Raleigh
Elliott, Mrs. Joseph A. ..... Charlotte

Elliott, Mrs. A. H.....Wilmington
Elliott, Mrs. W. M.....Forest City
Ellinwood, Mrs. E. H.....Snow Hill
Ennett, Mrs. N. T.....Greenville
Evans, Mrs. J. E.....Wilmington
Felton, Mrs. R. L.....Aberdeen
Felts, Mrs. R. L.....Durham
Fetner, Mrs. Colin.....Lenoir
Ferguson, Mrs. Robert.....Charlotte
Ferneyhaugh, Mrs. W. T.....Reidsville
Ferree, Mrs. Arnold.....Plymouth
Ferrington, Mrs. R. K.....Lexington
Fields, Mrs. L. E.....Chapel Hill
Fike, Mrs. Ralph.....Wilson
Fitts, Mrs. N. P.....Swanquarter
Flagge, Mrs. P. W.....High Point
Fleming, Mrs. M. I.....Rocky Mount
Flowers, Mrs. C. E.....Zebulon
Fox, Mrs. R. E.....Raleigh
Fox, Mrs. P. G.....Raleigh
Fox, Mrs. N. A.....Guilford College
Frye, Mrs. Glenn.....Hickory
Freeman, Mrs. Jere.....Wilmington
Gambrell, Mrs. J. C.....Lexington
Garvey, Mrs. R. R.....Winston-Salem
Garvey, Mrs. Fred.....Winston-Salem
Garrison, Mrs. Ralph.....Hamlet
Garrington, Mrs. C. G.....Bethel
George, Mrs. J. C.....Asheville
Gibson, Mrs. M. R.....Raleigh
Gibson, Mrs. L. O.....Statesville
Gilmore, Mrs. Clyde.....Greensboro
Gilbert, Mrs. E. L.....Winston-Salem
Glascock, Mrs. Harold, Jr.....Raleigh
Godwin, Mrs. J. C.....Sanatorium
Gold, Mrs. Ben.....Shelby
Goodwin, Mrs. A. B., Sr.....Lenoir
Goodwin, Mrs. O. S.....Apex
Goode, Mrs. T. V.....Statesville
Goswick, Mrs. H. W.....Winston-Salem
Graham, Mrs. Benj.....Wilmington
Greene, Mrs. Thomas.....Wilmington
Grimes, Mrs. W. L.....Winston-Salem
Griffin, Mrs. H. W.....Black Mountain
Hamer, Mrs. Douglas.....Lenoir
Hamrick, Mrs. J. Y.....Boiling Springs
Hamilton, Mrs. J. H.....Raleigh
Harbison, Mrs. J. W.....Shelby
Hart, Mrs. O. J.....Winston-Salem
Harrison, Mrs. E. T.....High Point
Hardin, Mrs. Graham.....Burlington
Hardin, Mrs. E. R.....Lumberton
Harris, Mrs. Andrew, Sr...Wilmington
Harrell, Mrs. Jack.....Goldsboro
Harper, Mrs. J. H.....Snow Hill
Harper, Mrs. F. T.....Sanatorium
Harman, Mrs. R. H.....Boone
Haynes, Mrs. James A.....Goldsboro
Haugh, Mrs. J. D.....Sanatorium
Hatcher, Mrs. M. A.....Hamlet
Hedrick, Mrs. Clyde R.....Lenoir
Hedgpeth, Mrs. L. R.....Lumberton
Hege, Mrs. J. Roy.....Winston-Salem
Henry, Mrs. Boyce.....Rockingham
Hemingway, Mrs. J. D.....Bethel
Hicks, Mrs. V. M.....Raleigh
Higgenbothem, Mrs. Epohur,
Roanoke Rapids
Highsmith, Mrs. Seavy....Fayetteville
Hill, Mrs. M. D.....Raleigh
Hoggard, Mrs. J. T.....Wilmington
Holt, Mrs. D. W.....Greensboro
Holt, Mrs. W. P., Sr.....Erwin
Holmes, Mrs. A. B.....Fairmont
Hooker, Mrs. John S.....Chapel Hill
Houser, Mrs. F. M.....Cherryville
Howard, Mrs. Corbitt.....Goldsboro
Hunt, Mrs. W. B.....Lillington
Hunt, Mrs. J. F.....Spindale
Hunter, Mrs. F. P.....Fort Bragg
Hurdle, Mrs. S. W.....Winston-Salem
Hyde, Mrs. Frank.....Beaufort
Jarman, Mrs. F. G.....Roanoke Rapids
Jennings, Mrs. R. S.....Thomasville
Johnson, Mrs. W. M.....Winston-Salem
Johnson, Mrs. Paul.....Winston-Salem
Johnson, Mrs. G. F.....Winston-Salem
Johnson, Mrs. T. C.....Lumberton
Johnson, Mrs. J. R.....Ramseur
Johnson, Mrs. George W...Wilmington
Johnson, Mrs. Harry L.....Hickory
Johnson, Mrs. J. S.....Huntersville
Johnston, Mrs. W. W.....Manteo
Jones, Mrs. Beverly....Winston-Salem
Jones, Mrs. R. Rives....Winston-Salem
Jones, Mrs. C. C.....Apex
Joyner, Mrs. P. W.....Enfield
Judd, Mrs. E. Clarence.....Raleigh

Judd, Mrs. James M.....Varina
Kafer, Mrs. Oscar A.....New Bern
Keiger, Mrs. J. A.....Greensboro
Kendell, Mrs. Ben.....Shelby
Kent, Mrs. Alfred.....Granite Falls
King, Mrs. E. S.....Wake Forest
Kirby, Mrs. W. L.....Winston-Salem
Knight, Mrs. W. P.....Greensboro
Knox, Mrs. J. C.....Raleigh
Lackey, Mrs. W. J.....Fallston
Lackey, Mrs. M. A.....High Point
Lancaster, Mrs. F. J.....Lexington
Lassiter, Mrs. Vernon..Winston-Salem
Lassiter, Mrs. H. G.....Roanoke Rapids
Lattimore, Mrs. E. B.....Shelby
Lawrence, Mrs. B. J.....Raleigh
Lee, Mrs. Mike, Jr.....Kinston
London, Mrs. Arthur H., Jr...Durham
Long, Mrs. V. M.....Winston-Salem
Long, Mrs. T. W. M.....Roanoke Rapids
Love, Mrs. B. E.....Roxboro
Love, Mrs. Ralph.....Lenoir
Lott, Mrs. H. S.....Winston-Salem
Lowery, Mrs. J. R.....Salisbury
Lowery, Mrs. E. L.....Raleigh
Lyday, Mrs. R. O.....Greensboro
McCain, Mrs. P. P.....Sanatorium
McCants, Mrs. C. H.....Winston-Salem
McDowell, Mrs. W. K...Scotland Neck
McGeachy, Mrs. R. S.....Weldon
McGhee, Mrs. John.....Reidsville
McGee, Mrs. Robert.....Raleigh
McIntyre, Mrs. S.....Lumberton
McGoogan, Mrs. B. J.....Morven
McKee, Mrs. Lewis.....Durham
McLeod, Mrs. N. H.....Raleigh
McMillan, Mrs. R. L.....Winston-Salem
McMillan, Mrs. E. A.....Winston-Salem
Mackie, Mrs. G. C.....Raleigh
Maddry, Mrs. M. C.....Roanoke Rapids
Manning, Mrs. I. H.....Chapel Hill
Maness, Mrs. A. K.....Greensboro
Mann, Mrs. I. T.....High Point
Mathews, Mrs. B. B.....Shelby
Matheson, Mrs. R. A., Jr...Sanatorium
Matheson, Mrs. Gaddy.....Ahoskie
Martin, Mrs. J. A.....Lumberton
Melham, Mrs. C. G.....Hamlet
Miller, Mrs. R. C.....Gastonia
Miller, Mrs. R. B.....Goldsboro
Milliken, Mrs. J. S.....Southern Pines
Mitchell, Mrs. George.....Wilson
Mitchiner, Mrs. J. S.....Raleigh
Merritt, Mrs. J. H.....Woodsdale
Mock, Mrs. C. G.....Salisbury
Montgomery, Mrs. H. M.....Burlington
Moore, Mrs. D. L.....Falkland
Moore, Mrs. Julian.....Asheville
Moore, Mrs. W. Houston....Wilmington
Moore, Mrs. C. E.....Wilson
Moore, Mrs. Vic.....Shelby
Moore, Mrs. R. A.....Winston-Salem
Mullen, Mrs.....Wilson
Morris, Mrs. Caldwell.....Wilmington
Munt, Mrs. Herbert F...Winston-Salem
Murchison, Mrs. D. R.....Wilmington
Mudgett, Mrs. W. C.....Southern Pines
Murray, Mrs. R. L.....Sanatorium
Nance, Mrs. C. L.....Charlotte
Neville, Mrs. C. H.....Scotland Neck
Nichols, Mrs. A. F.....Roxboro
Nichols, Mrs. R. E.....Durham
Nicholson, Mrs. A. F.....Roxboro
Norton, Mrs. Roy.....Raleigh
Nowell, Mrs. S. C.....Hickory
Ogburn, Mrs. C. L.....Winston-Salem
Orr, Mrs. Charles C.....Asheville
Ormand, Mrs. A. L.....Black Mt.
Overcash, Mrs. W. E...Southern Pines
Owens, Mrs. F. L.....Pinehurst
Owenby, Mrs. Arthur.....Greensboro
Pace, Mrs. K. B.....Greenville
Palmer, Mrs. Horace.....Lillington
Parker, Mrs. S. F.....Shelby
Parker, Mrs. J. Wesley.....Seaboard
Parker, Mrs. W. R.....Jackson
Parker, Mrs. O. L.....Clinton
Perry, Mrs. D. R.....Durham
Perry, Mrs. Glenn.....High Point
Phillips, Mrs. E. N...North Wilkesboro
Pittman, Mrs. M. A.....Oak City
Pittman, Mrs. E. E.....Wilson
Poole, Mrs. Bennett.....Winston-Salem
Powers, Mrs. Frank P.....Raleigh
Proctor, Mrs. Ivan M., Jr.....Raleigh
Pullian, Mrs. B. E.....Winston-Salem
Pugh, Mrs. C. H.....Gastonia
Rainey, Mrs. W. T.....Fayetteville

Rankin, Mrs. W. S.....Winston-Salem
Rousseau, Mrs. J. P.....Winston-Salem
Ray, Mrs. John B.....Leaksville
Redwine, Mrs. J. Dan.....Lexington
Register, Mrs. F. M.....Kinston
Reynolds, Mrs. Carl V.....Raleigh
Ricks, Mrs. E. L.....Fairmont
Richardson, Mrs. W. P.....Chapel Hill
Rivers, Mrs. Fletcher..Winston-Salem
Robertson, Mrs. Jim.....Wilmington
Robinson, Mrs. Donald E.....Burlington
Robinson, Mrs. C. W.....Charlotte
Robinson, Mrs. John D.....Wallace
Rodman, Mrs. Robert.....Wilmington
Rogers, Mrs. J. R.....Raleigh
Root, Mrs. Aldert S.....Raleigh
Rose, Mrs. David.....Goldsboro
Royal, Mrs. D. M.....Salemburg
Royal, Mrs. Ben.....Morehead City
Royster, Mrs. D. S.....Shelby
Russell, Mrs. Charles R...Granite Falls
Seay, Mrs. H. L.....Huntersville
Seay, Mrs. T. W.....Spencer
Shaver, Mrs. W.....Albemarle
Shaw, Mrs. Colin.....Atkinson
Sharp, Mrs. Frank.....Greensboro
Sharpe, Mrs. C. R.....Lexington
Sherrill, Mrs. P. M.....Thomasville
Sherrill, Mrs. H. R.....Shelby
Sidbury, Mrs. J. Buren....Wilmington
Simmons, Mrs. R. R...Winston-Salem
Skeen, Mrs. L. B.....Sanatorium
Slate, Mrs. M. L.....High Point
Sloan, Mrs. Henry L.....Charlotte
Smith, Mrs. J. E.....Windsor
Smith, Mrs. W. H.....Goldsboro
Smith, Mrs. Sidney.....Raleigh
Smith, Mrs. Frank.....Wilson
Smith, Mrs. J. McN.....Rowland
Smith, Mrs. W. O.....Scotland Neck
Smith, Mrs. O. F.....Scotland Neck
Smith, Mrs. J. A.....Lexington
Smith, Mrs. W. S.....Lexington
Spears, Mrs. Paul.....Winston-Salem
Spicer, Mrs. R. W.....Winston-Salem
Sprunt, Mrs. W. H.....Winston-Salem
Starling, Mrs. W. P.....Roseboro
Stevens, Mrs. M. L.....Asheville
Stevenson, Mrs. B. E...Roanoke Rapids
Strickland, Mrs. Willard.....Raleigh
Strickland, Mrs. A. T.....Wilson
Strickland, Mrs. Millard.....Wendell
Strickland, Mrs. Ernest.....Wilson
Street, Mrs. C. A.....Winston-Salem
Strosnider, Mrs. C. F.....Goldsboro
Stutz, Mrs. Greer.....Southern Pines
Suitor, Mrs. W. G.....Weldon
Sumner, Mrs. Emmett.....High Point
Sykes, Mrs. R. P.....Asheboro
Symington, Mrs. John.....Carthage
Taylor, Mrs. A. R.....Goldsboro
Taylor, Mrs. Frederick R...High Point
Taylor, Mrs. Wesley.....Greensboro
Taylor, Mrs. F. J.....Roanoke Rapids
Taylor, Mrs. W. I.....Burgaw
Tayloe, Mrs. John C.....Washington
Tayloe, Mrs. Joshua.....Washington
Terry, Mrs. J. R.....Lexington
Tew, Mrs. Cloyce R.....Raleigh
Thaxton, Mrs. B. A.....Roxboro
Thigpen, Mrs. H. G.....Scotland Neck
Thomas, Mrs. C. D.....Sanatorium
Thompson, Mrs. E. S...Winston-Salem
Tice, Mrs. W. T.....High Point
Trall, Mrs. R. L.....Winston-Salem
Tuttle, Mrs. R. G.....Winston-Salem
Tuttle, Mrs. A. S.....Leaksville
Tyner, Mrs. C. V.....Leaksville
Vernon, Mrs. James W.....Morganton
Wall, Mrs. Roscoe L.....Winston-Salem
Walker, Mrs. R. J.....Snow Hill
Walker, Mrs. H. D.....Elizabeth City
Ward, Mrs. W. T.....Raleigh
Weathers, Mrs. B.....Roanoke Rapids
Whicker, Mrs. Guy L.....Kannapolis
White, Mrs. F. W. M.....Halifax
White, Mrs. .....Lenoir
Whittington, Mrs. C. T.....Greensboro
Wilkins, Mrs. John W.....Mt. Olive
Wilkins, Mrs. R. B.....Durham
Williams, Mrs. A. F.....Wilson
Williams, Mrs. J. H.....Clinton
Williams, Mrs. Charles L.....Raleigh
Willis, Mrs. H. C.....Wilson
Wilson, Mrs. C. L.....Lenoir

Winstead, Mrs. J. L.....Greenville
Woodward, Mrs. C. A.....Wilson
Woodard, Mrs. A. G.....Goldsboro
Wood, Mrs. E. J.....Wilmington
Wolf, Mrs. N. C.....Burgaw
Wright, Mrs. John B.....Raleigh
Wright, Mrs. O. E.....Winston-Salem
Wyatt, Mrs. Wortham..Winston-Salem
Wyatt, Mrs. A. T.....Lillington
Yoder, Mrs. Paul.....Winston-Salem
Yokely, Mrs. R. V.....Thomasville
Zealy, Mrs. A. H., Jr.....Goldsboro

PROCEEDINGS

Twenty-Eighth Annual Session

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

President
M. T. Foster, M.D.

Secretary-Treasurer
A. H. Elliott, M.D.

THE CAROLINA
PINEHURST, N. C.
MAY 2, 1938

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

MONDAY MORNING SESSION

May 2, 1938

The Twenty-eighth Annual Session of the North Carolina Public Health Association convened at 9:50 o'clock in the Ballroom of The Carolina, Pinehurst, North Carolina, Dr. M. T. Foster, President, presiding.

President Foster: The Twenty-eighth Annual Session of the North Carolina Public Health Association will now come to order.

We will have an invocation by Reverend W. S. Golden of Carthage.

Rev. W. S. Golden: Our gracious Heavenly Father, as we meet here today we thank Thee that it is given to Thy children to help in the alleviation of suffering, and in the prevention of suffering, and in the building of a better world in which we all may live. We pray Thee, our Father that Thou wilt bless the activities of this convention. Be Thou with every individual one who shall take a part, or who shall only come to listen.

Be with those whom they have left behind, and when these meetings are over, may each one have a safe homeward journey, and a long career of useful service.

We ask it in Christ's name. Amen.

Secretary Elliott: Before we have the President's Address, I want to appoint on the Committee on the President's Address Dr. Ennett, Dr. Cox, and Dr. Harden, and Dr. Cotten.

We will now hear from our President.

President Foster then presented his prepared address. (Applause.)

PUBLIC HEALTH EDUCATION

By M. T. Foster, M.D., Fayetteville, N. C.

Members of the N. C. Public Health Association and Guests:

The N. C. Public Health Association did me a great honor last May by electing me president. I appreciate this honor, and have tried to show my appreciation by serving the association to the best of my ability. Our most efficient secretary, Dr. A. H. Elliott, is largely responsible for the splendid program we have today, and at this time I would like to thank him for his untiring efforts. I also wish to thank those who appear on our program, especially those from without the state. In formulating today's program, in so far as possible, we followed suggestions sent to us by members of the association.

Of the many phases of public health work one might enlarge upon, I

will confine my remarks primarily to that of Public Health Education, because this is the phase of the work on which all public health activities hinge. This phase of public health work has gained momentum in the past few years, especially in the upper stratum of our populaiton, and a reduction in morbidity and mortality has been noted. There are many factors responsible for this, among which I consider the most important is better trained health workers who staff our health departments. Public health should be and is now being recognized as a specialty for the public health nurse and sanitarian, as well as the county health officer. To further advance public health education, all public health workers should take advantage of their every opportunity to broaden their knowledge by taking postgraduate courses, attending public health meetings, visiting other health departments, and reading professional books and magazines.

The most common mediums for disseminating knowledge concerning health are newspapers, radios, bulletins, magazines, exhibits, lectures, etc. These mediums serve and inform those who have access to them very effectively, but fail to reach those who do not subscribe to newspapers, cannot afford radios, and possibly live in areas where there is no organized health work. Trained public health nurses, social service workers, and hospital dispensaries are also effective and helpful when they are available.

Public health education being fundamental and occupying such an important place in our program of disease prevention, I believe we should give thought to more efficient ways whereby the less fortunate and illiterate of both white and colored races might be better educated concerning health. When this is done, morbidity and mortality would show a more rapid reduction. Health education should begin in the home by the parents teaching the developing child the art of sanitary living. But unfortunately many parents are poverty stricken, and from a lack of knowledge, are unable to teach their offspring even the simplest laws of sanitation. The prevention of disease by immunization is not known to many of them. It is among these people that we find our highest infant mortality, pellagra, tuberculosis, hookworm, typhoid fever, dysentery, syphilis, etc. Public health authorities should take a leading part in educating the general public concerning health and the prevention of disease, but many other agencies must assist if education of the less fortunate is to be accomplished.

Compulsory education brings together representatives from practically every home, which gives the schools an opportunity to assist the public health workers. It is the opinion of many school authorities that public health should occupy as prominent a place in the school curriculum as agriculture, home economics, art, public school music, etc. Public health courses should be a most important part of the curriculum from kindergarten to university. Public health instruction through the public

schools by teachers with special training would reach the home through the children. It is not my desire to belittle the public health program as it is now being conducted in the schools. But it is my belief that less important subjects should be curtailed, or discontinued, and a teacher trained in public health spend her entire time teaching this important subject in each grade in every school. By this method the students would supplement considerably our present methods of informing the parents concerning preventive medicine, and by so doing the less fortunate of our next generation would be as well informed as the upper stratum of our population is today.

From the study of statistics, it is made clear that satisfactory progress has been made in control of several of our most dreaded diseases. Smallpox and typhoid fever has become a rarity in many sections while others like diphtheria and tuberculosis have become less prevalent. Although amazing progress has been made in some fields, there are yet many aspects of public health work in which little has been done. I believe it can be said to make similar progress in other fields of public health, the public must be informed concerning these problems as they have been educated about smallpox and typhoid.

During the past several months much has been seen in the newspapers and magazines concerning syphilis. Surveys have been made to determine the prevalence of the disease. Large amounts of money have been made available to provide free treatment for the indigent. Radio broadcasts on the venereal diseases have been heard throughout the country. Lectures to clubs and other interested groups have been made. Even sound pictures have been shown to school children as young as twelve years. The general public, as well as the syphilitic, is being taught the length of time required to arrest syphilis. The N. C. State Law requires that a person with syphilis be treated, and many have been lodged in jail to insure treatment. This nation-wide syphilitic program is breaking down false modesty, and the public is being led to become syphilitic minded, whereby the disease might be considered just another infectious disease as diphtheria and typhoid fever. This syphilitic educational program has already caused the discovery of many thousand cases of the disease, and clinics have been enlarged where those unable to pay might get adequate treatment. This syphilitic program while in its infancy serves as a good example of just what the reaction will be when the public becomes well informed concerning an important problem which has to do with the prevention of disease and untimely deaths. This program also serves as a good example of how difficult it is to reach a certain class of our population. This syphilitic propaganda has reached well the upper classes but the class of people where most syphilis is found has not been reached. As evidence of this fact practically all cases of syphilis referred to free clinics for treatment when asked what their disease is, and where they got it answer, "I do not know. I was told I

needed shots for bad blood." Under our present plan of syphilitic control a large number of cases will be found and treated, but to make the eradication permanent every child from twelve years up must be acquainted with the disease, and I know of no better way to reach them than through the public schools.

There are many public health problems which are common to all walks of life that have been given very little publicity as evidenced by the fact that they continue to exist today. Time will only permit me to mention a few of them briefly. First, I have in mind the common drinking glass which is seen daily at our soda fountains. Practically none of these glasses are sterilized after being used. Roseneau tells us that the diseases which spread largely from the discharges from the mouth and nose can readily be transmitted from one person to another by the common drinking glass. This health menace has practically been replaced in the schools by drinking fountains or individual drinking cups. In my opinion when the public is sufficiently informed that the most prevalent and damaging of the infections might be gotten from the rim of an unsterilized drinking glass, they no longer would accept anything less than a single service paper cup, or a sterilized drinking glass.

When John Q. Public is sufficiently informed concerning matters of health, the majority of these problems referred to, and others will automatically be corrected. The medicine man who is frequently seen on the highways, in villages and cities, commonly known as the herb doctor, will no longer have an audience who will listen to his fraudulent claims and buy his worthless wares. I have heard them proclaim that the oil they were offering for sale if applied to the right lower quadrant would cure appendicitis, making an operation unnecessary. We are aware of the number of deaths annually from ruptured appendices, and no doubt some are due to such advice. Many such claims are made, and many bottles of useless and probably harmful preparations are sold to the uninformed public. I have been informed that a few states have a law forbidding the so-called medicine show, which if enforced will not only improve the health and happiness of those who consent to suggestion, but will help to send them to a medical doctor earlier for diagnosis and treatment.

During the past few months we have all noted an increased interest in the prevention and cure of cancer. Much publicity has been given to the subject through the press, over a radio, etc. We are also familiar with the number of deaths annually from cancer, and the untold suffering it causes. The causative agent of cancer has not been definitely determined, but we know that a large per cent of cancer develops from precancerous lesions, such as moles, burns, injuries, etc., which can be discovered by physical examination, and if properly treated would not become malignant. To bring this about the public must be made so health

conscious that each individual will get a thorough physical examination at least annually. An annual physical examination would not only prevent cancer in many instances, but would give the physician an opportunity to discover many other physical defects, many of which found early would prolong the patient's life. A small per cent of our population realize that a physician should be seen regularly during one's lifetime. The public must be educated to do this if we expect to prevent illness, and to prolong life by early diagnosis of diseases which are now near the head of the list in the cause of deaths.

I think it can clearly be seen that the general public is not as well informed along health lines as they should be, and that advantage is not taken of the advances in medicine to prevent and cure disease. Although we have gained momentum in public health education, it has been confined somewhat to a limited group. The success that we wish to achieve hinges on our ability to make it possible for every person to be well informed whereby they might take advantage of the many discoveries that lend to the prevention of disease and lengthening the span of life. This requires the teaching of public health in our schools as well as the use of all other methods at our disposal.

Once this is accomplished all governmental agencies would consider first the health of its citizens, and the future generation would be stronger than the present one, and our country would be a better and safer place to live.

President Foster: I see that we have several visitors with us at this time, a few that I recognize. I am sorry I can't recognize all our visitors, I don't know you all. There are a few that I would particularly like to arise as I call your name so that we may all recognize you: Dr. W. A. McIntosh of the International Division of the Rockefeller Foundation. (Applause.)

Dr. Ben Wyman, the director of county health work, South Carolina State Board of Health. (Applause.)

Mr. Farrish, who is also in Dr. Wyman's department. (Applause.)

Dr. Collison, from the South Carolina State Health Department. (Applause.)

Gentlemen, we welcome you all and all other visitors that we have with us today. We will be glad to have you take part in this meeting and help out in the discussion whenever you like to join in.

The first speaker on our program today is Dr. William Moore, State Veterinarian. His subject is, "Some Facts Concerning Rabies and Suggestions for its Control."

We will now hear from Dr. Moore.

Dr. Moore then presented his prepared address, making the following interpolation, before the words: "A quarantine on all dogs, properly enforced, together with vaccination," at the bottom of page 5: This

chart right here is North Carolina. Dr. Hamilton of the State Department of Hygiene very kindly furnished this.

This is 1920. This is 1937. This peak here is in 1935. This is when our state-wide law became effective, and of course rabies dropped as soon as that was passed. It went right down. We didn't have any law here but it went down just the same.

(Chart.) The other chart is New York City, which shows the same thing. Their peak was in 1913 and 1926-7. I just brought those along to show that according to the heads examined—and I think that is a good index—it does travel in that cycle.

Dr. Moore then concluded the reading of his prepared paper. (Applause.)

SOME FACTS CONCERNING RABIES AND SUGGESTIONS FOR ITS CONTROL

By Dr. William Moore
State Veterinarian

I appreciate the privilege of appearing on your program today to give you some facts concerning rabies, and suggestions for its control. I do not claim to be an authority on this disease, or any other for that matter, but I feel that I have had sufficient experience in the control of other animal diseases to at least make me brave enough to suggest to this association a control program for rabies.

The fundamental principles for the control of all animal diseases are the same. The details of control, of course, are somewhat different, and I judge that this is true also in the field of human diseases. I feel that it is not necessary for me to discuss the history, etiology, symptoms, etc., of rabies with this group, as this has been covered many times in medical and veterinary journals, bulletins, and other publications, but I shall briefly discuss the situation as I see it in North Carolina.

In my opinion, rabies is not a major state-wide animal disease problem. It may become a major problem in certain communities, but the economic loss in general is far less from this disease than from many others that we hear little or nothing about, and I presume that this is somewhat the same in the field of public health. I, of course, realize that a rabid dog running amuck in a community and biting other dogs, and perhaps some persons, or the death of one person from rabies causes more excitement and hysteria than the death of several people from some long drawn out preventable disease.

For several years prior to 1935 rabies was quite prevalent in many communities in North Carolina, and during that time there were several human deaths from this disease. In the General Assembly of 1929-'31 and '33 there was considerable sentiment for legislation to control this disease, and in the 1935 session this sentiment sufficiently crystal-

lized to enact a state-wide dog vaccination law, which is now in existence, and with which most of you are familiar. I think that the sponsors of this law were honest and conscientious and believed that this law would make it possible to control rabies. Assuming, for the sake of argument, that the principals as laid down in this law will control and prevent rabies on a state-wide basis, and I don't think it will, I am of the opinion that it will fail to do so mainly for the following reasons:

1. The appointment of persons without training and experience to administer the vaccine. I know from correspondence and personal contacts that many of the inspectors appointed were not capable of performing their duties. If we are to expect good results from rabies vaccine, or from any other vaccine, it must be administered by trained men—that is, qualified veterinarians.

2. That it will never be possible under our system to vaccinate all dogs, and so far as I know, no disease of man or animal has been eradicated by vaccination alone.

3. Divided authority. This law places the authority for enforcement in the County Health Officer, or where there is no health officer, in the County Commissioners, the Department of Agriculture, the rabies inspector, and the sheriff, without defining the duties of any of these definitely. To properly carry out any program of animal disease eradication, the authority must be placed with some person or agency.

4. Lack of supervision. One of the most essential requirements in any campaign for the control of animal diseases is close supervision of the work by someone thoroughly trained along this line. This is impossible under our present law, as the vaccination must be done throughout the state during a period of ninety days from April 1. Personnel or funds are not available for this.

5. Lack of coöperation and public support. In many counties law enforcement officers have failed to give assistance, especially during election years, due, no doubt, to an indifference or antagonism on the part of the public. There seems to be almost a complete indifference by the public in reference to laws pertaining to dogs. There are many pages of laws on our books pertaining to dogs, few of which, including tax laws, are observed or enforced. Since 1919 it has been unlawful for any owner to permit a dog to run at large at night unless accompanied by the owner, or some member of the owner's family, or some other person by the owner's permission. We all know that this law is not observed, and I never heard of a prosecution under it.

6. The law is complicated, ambiguous, and difficult, if not impossible, to enforce on a state-wide basis.

Much has been said and written for and against single dose canine rabies vaccine, and I therefore do not hesitate to express my own opinion, which is that a proper dose of potent vaccine properly administered to a healthy dog will, in most cases, prevent rabies for a period of

about one year. I know that it is not 100 per cent effective, but there is abundant proof that the incidence of rabies in vaccinated groups of dogs is greatly reduced as compared with unvaccinated groups. I am sure that all of you have read the splendid articles on control of rabies by Dr. George A. Dennison of Birmingham, Ala., and perhaps the reports of Kansas City, Mo., Atlanta, Ga., Albany, Ga., Tulsa, Okla., Liberty, Mo., Parsons, Kas., Rocky Mount, N. C., and others. I realize that in these cases the law was strictly enforced, and the unlicensed and unvaccinated dogs were disposed of, and thus the incidence of rabies was reduced. Nevertheless, the vaccination campaign seems responsible for the reduction of rabies. There are, of course, many angles to consider in attempting to analyze the results of such a campaign. We of course know that rabies occurs somewhat in cycles of about ten years duration. At the time our rabies law was enacted, rabies was on the down curve, and some have been led to believe that vaccination under the law was responsible for this reduction. I do not share this belief, but will give you a summary of what has been done, and let you form your own opinion.

In 1935, the first year that we operated under the law, there were 42 counties that appointed inspectors that were approved by the Department of Agriculture, and twenty counties appointed inspectors, but did not submit the names to the Department for approval—a total of sixty-two counties that did more or less vaccination, and the Department of Agriculture distributed 63,370 doses of rabies vaccine, and we estimate that there were approximately 100,000 dogs vaccinated.

In 1936, thirty-two counties submitted the names of inspectors, and four appointed them but did not submit them for approval, making a total of thirty-six. We distributed 50,000 doses of vaccine, and we estimate that about 75,000 dogs were vaccinated.

In 1937, fourteen counties submitted names of inspectors, and about three other counties appointed inspectors, a total of seventeen. We distributed 10,000 doses of vaccine, and we estimate that about 25,000 dogs were vaccinated.

So far in 1938, nine counties have submitted the names of inspectors, and we have distributed 4,330 doses of vaccine. To summarize:

1935	62	counties	63,370
1936	32	counties	50,000
1937	17	counties	10,000
1938	9	counties	4,330

By way of explanation, I wish to state that in some counties, inspectors work from year to year without reappointment. I do not know whether or not this is in accordance with the law.

Estimates on the number of dogs in North Carolina run from 200,000 to one million. I think it is safe to assume that there are at least 500,000

dogs in the state. I have previously stated that we estimated that there were 100,000 dogs vaccinated in 1935; 75,000 in 1936; 25,000 in 1937; and perhaps 15,000 to 20,000 in 1938. Taking the highest number in any year—100,000 in 1935—it would be only about 20 per cent of the dog population vaccinated in widely scattered areas, and this certainly could not be responsible for any great reduction in rabies, even though we assume that the vaccine is highly efficient.

The present rabies law has been studied and commented on by a great many persons qualified to do so, but I know of no one who might be classed as an authority who has endorsed this law or who believes that it will accomplish the purpose for which it was intended. I think that the present law has been given a fair trial, and found inadequate, and that we should therefore draft and present something to take its place that we believe will be effective. I know that this association is interested in this matter, but I do not know your attitude towards the present law, except in the case of a few members. My recommendation in this matter is that the present law be repealed, and a law enacted giving the County Health Officer, or the County Board of Health, full authority to carry out such control measures as they may deem necessary, as is the law in other public health matters. The law should be short and explicit, so as not to be misunderstood, and the County Board of Health should be given authority to make regulations to carry out the details. If public opinion will support it, I think that annual vaccination should be enforced—certainly in those counties where rabies is more or less prevalent. If properly handled, it will raise sufficient revenue to employ some person to enforce the law, and any quarantine that may be issued, and will result in getting rid of a large number of worthless dogs that are responsible for the spread of disease. Any law, to be effective, must provide for quarantine, and this must be rigidly enforced. I do not believe that state-wide vaccination can be justified when we take into consideration the records of the brains examined by the State Laboratory of Hygiene. I realize that some of the local health departments make such examinations, and that the heads of all rabid animals are not sent to the Laboratory; yet this very dependable service has long existed, and the public throughout the state has come to depend upon it and, in general, have great confidence in it, and their records are a good index as to the prevalence of rabies. I wish here to state that the veterinary profession in North Carolina has the utmost confidence in the State Laboratory of Hygiene, and they have repeatedly stated that their findings were in complete agreement with the history and diagnosis, notwithstanding the statement sometimes made by the uninformed that all heads sent to the Laboratory were positive—a statement we know to be incorrect, as shown by the records. Going back to the records of the State Laboratory of Hygiene, *Health Bulletin,* August 1937, we find that for the five years, 1932-1936 inclusive, that there were six counties with all reports nega-

tive, five counties with one positive each, and eleven with five or less each over the five-year period. We certainly could not justify the expense and trouble of vaccinating the dogs in these twenty-two counties, nor could we justify it from a disease control standpoint. A quarantine on all dogs properly enforced, together with vaccination instituted by the County Health Unit under a law such as I have suggested, would surely take care of the situation in these twenty-two counties, and I believe it would do the same in any county with less expense, confusion, and criticism than attempting a state-wide program of vaccination. I think that one of the great mistakes that has been made in the attempted control of rabies, and perhaps other diseases, is that we have failed to properly inform the public on what we are trying to do, and to set forth clearly the duty of the public in connection with same. This seems impossible on a state-wide basis with our present set-up, but could be readily accomplished by a local health unit under a law such as I have suggested. The public should be repeatedly told that the control and eradication of rabies depends largely upon their coöperation in confining dogs when requested, reporting suspicious cases, holding dogs under observation that have bitten someone, and carrying out such other instructions as may be made. Whenever the public wants to get rid of rabies, the disease will disappear in a couple of years, but this will never happen so long as a majority of the dogs are allowed to run at large. Another mistake that is still frequently made is the destruction of dogs suspected of having been bitten by a dog with rabies, or the destruction of a dog that has bitten some person. This is a very grave mistake; such dogs should be held under observation for a period of two weeks, at the end of which time, if the dog remains well, we can be assured that it has not transmitted rabies.

I realize that this has been a rather rambling discussion, but I hope that it may provoke some further remarks by many members of this association who are qualified to speak on this subject. It is my hope that this association will at this meeting take some very definite action looking to an improved rabies law from the General Assembly of 1939.

President Foster: I will ask Dr. R. A. Herring to discuss this paper. Is Dr. Herring in the audience? (No response.)

This is a very important subject. It is a subject in which all health workers should be intensely interested. We should have some discussion concerning rabies. I would like to ask for volunteers, anyone in the audience who would like to discuss this important subject.

Dr. W. A. McIntosh (New York): Dr. Moore stated that he estimated there were something like a half million dogs in the state, and that during the last three or four years a little over 200,000 have received vaccinations.

I wonder if he has any data regarding the percentage of dogs that

are diagnosed positive in the laboratory that fall into the vaccinated or unvaccinated group. Do I make myself clear?

Here are 200,000 dogs, or a little more, that have been vaccinated against rabies. Each year the laboratory receives a certain number of dogs' heads to diagnose for rabies.

What percentage of the dogs, specimens from whom have been sent in to the laboratory, have been vaccinated against rabies, and what per cent have not?

Dr. Jos. A. Morris (Oxford): I have a question I would like to ask Dr. Moore.

How is it that a human being must take twenty-one doses to be immunized and a dog can be immunized with one dose? (Laughter.) If it is an attenuated virus it looks as if the dog is very much in jeopardy if the attenuation is so small that one dose will immunize.

I hope Dr. Moore will give us some light on that, if it really is immunity after one dose.

Dr. Moore: Answering the last question first, the two vaccines are entirely different. Even though they both are called rabies vaccine they are entirely different. I guess the public places more value on the human than they do on the dog, so they give the man twenty-one doses and the dog just one. As a matter of fact, we all know that the twenty-one dose treatment is the most effective treatment. That, as I understand, is an attenuated vaccine in the beginning. Of course, we know that is the most satisfactory vaccine to use, but it is out of the question to use the twenty-one dose treatment on dogs. It would be too expensive and too difficult to give.

The single dose canine rabies vaccine is a killed vaccine. Most of it is phenol-killed. There are some firms which make a chloroform-killed vaccine, from which they claim better results are obtained, but the majority of it on the market is phenol-killed, and is sterile.

You will find lots of argument for and against single dose rabies vaccine. As I said, in my own opinion, it does have some immunizing value. I don't think it is one hundred per cent immunizing. I don't think, as a matter of fact, that the twenty-one dose is one hundred per cent immunizing, but it will reduce the incidence of rabies, in my opinion.

In reply to the other question, unfortunately we are not able to get any figures on that. I realize that would be very important. I discussed that with Dr. Hamilton. He says there are a great many heads that are sent to the laboratory, only brains, that were vaccinated two, three, six, or eight months ago, but that is not reliable information because I have found from experience that a man will have a dog vaccinated, and he can't remember within twelve months when it was vaccinated. You can treat a cow and test a cow but, without going back to some record which

he usually doesn't have, the man owning a dog can't tell you within twelve months when the dog was vaccinated.

So the information is that we have a great many heads submitted of dogs who have previously been given a single dose of vaccine, but I don't think there is very much of that information, and it is not very authentic because it is more or less guesswork.

Dr. C. C. Hudson (Greensboro): I have been particularly interested in this question of rabies control for a number of years, and I was particularly pleased with the paper which Dr. Moore presented with reference to the present vaccination law.

The statement which he made in reference to the method of administration struck me as being particularly sound, because I think that any vaccine should be administered in a scientific manner, even though we are only going to administer it to dogs. We know that when we affect a dog we are getting pretty close to a great many people.

There are a number of questions there that need to be studied out from the practical standpoint. First, is the question of sensitization of these dogs by these vaccines. How often are we going to give it? Are we going to give it every year right along? We know that some of these dogs are going to be sensitive, just like people are, to vaccines, and that is a question that we need to study quite a little.

There are other questions that need to be worked out, yet. I am not so certain that we should attempt to handle this problem from certain angles at the present time as health officers.

In the first place, as Dr. Moore said, we think the vaccine is comparatively effective. Dr. Webster, as some of you know who have been attending the meetings of the American Public Health Association the last two years, has read papers there showing the results of certain research work that he has been doing—which he and his associates have been carrying on in the Rockefeller Foundation—on this particular virus that causes rabies. As most of you know, he has been trying to develop a method for protecting animals longer than one year. If we have to give vaccine every year, you see, a dog that lives five or six years may get quite sensitive after a while. If, however, you can give him one treatment, and can protect him at least four or five years, as Dr. Webster claims to have been able to do in practically all instances, then we are getting the vaccine on a practical basis, and up to the point where we can request the state to pass a law requiring vaccination of dogs, certainly in areas in which the disease is prevalent.

Dr. Moore brought that out quite well: That prevalence of rabies in certain areas, and so on, is a proved fact. We, of course, should study that problem in reference to the application of vaccines, it seems to me, and we might do it, especially if Dr. Webster and his associates are able to develop a vaccine which will be of fairly permanent benefit.

He has been able by intraperitoneal inoculation to protect dogs at

least four to five years. They have been carrying on the work that long, and it looks as though we will have a vaccine in the near future that will be effective for quite a long period. Then by using good practical methods in its application it looks as though we may be able to eradicate this disease entirely or almost entirely.

I think, though, we should go rather slowly at the present time in regard to Dr. Moore's recommendation. Just at the present time as health departments I think we ought to study it just a little further, and see if this vaccine that the Rockefeller people are working on is going to prove effective, and then see if we can't work out this question of the sensitization of animals, and so on, so that we can get it on a little more practical basis than it is at the present time.

President Foster: Dr. McIntosh, probably you could give us a little information on this new vaccine the doctor is speaking about.

Dr. W. A. McIntosh (New York): I know that Dr. Webster has been working on a rabies vaccine. I am a little more familiar with the work of Dr. Leach of Alabama, and the particular features of his work in that state, which is, after all, very closely associated with the work that Dr. Webster is doing in the Rockefeller Institute.

A number of brains from dogs are taken in to the laboratory that are diagnosed negative. There has been some suspicion that perhaps some of these negative reports from the laboratory which are based on the detection of the Negri bodies might not be reliable. So Dr. Webster has worked out a technique by using the white mouse, whereby these animals, these mice, can be inoculated, and a report obtained in about six days. In checking over the laboratory reports that are sent out from the state laboratories on this negative group of animals, there is quite a fair percentage of them that are positive when they are subjected to the mouse test. That is just a refinement on the laboratory diagnosis of rabies which has recently been developed.

Dr. Leach is also very much interested in determining the potency of vaccines which are distributed by various biological firms, and he is now engaged in a study of that character. It is too soon to make any reports along that line, but at present the potency would seem to vary quite a bit from one product to another.

I am particularly interested in the question that I raised a while ago: Whether we could—and it would seem to me that it would be possible—have come in on the card that is sent to the state a history of whether the dog has been vaccinated or not. Then we could see just what percentage of those dogs that are positive have had a history of vaccination, and what percentage have not. In that way we might be obtaining some information that would give us a little better basis for determining the effectiveness of the vaccine that we are using, or the particular type of vaccine that we are using.

I think, apart from what has already been said, that is about all that occurs to me at the present moment. (Applause.)

Dr. John Symington (Carthage): Mr. Chairman, I see Dr. Neal present. He is a veterinary surgeon, and has done successful work in vaccination against rabies. He came in late, and I don't suppose he knows that he has the privilege of the floor. I should like to have you ask him to discuss the paper.

President Foster: We will be very glad to have Dr. Neal give us something along this line.

Dr. Neal (Southern Pines): I don't know that I can add anything to what has been said. This is the second year I have been vaccinating in Moore County. They brought out quite a few dogs last year, but they are not bringing out many this year. I haven't much history on the cases that have been vaccinated as to whether they have gone mad or not. We haven't had many of them. I don't know what the record is, but we haven't had many cases that have had the single dose treatment that have gone mad. In fact, we haven't had many mad dogs in the last two years in Moore County. The people don't seem to be very much interested in it.

I don't believe I have anything else to say.

President Foster: Is there any further discussion?

Dr. D. E. Ford (Washington): When the law came out I didn't want to have anything to do with it because I knew it was just extra trouble, so I got someone interested in the fact that we would pay something. That was the county tax collector. His veterinarians wouldn't have anything to do with it because it was against their ethics to cut fees, and the county tax collector put the money in his pocket, that is, in the county's pocket. Since 1936 we haven't had to treat anybody for rabies. There was a spell before that when I was giving, well, eleven treatments a day over a short period.

One year up in Craven County I gave rabies vaccine to human beings every day for six months. We haven't had a case of rabies among dogs since 1936. Only one head was sent in last year, and one this year. Now we have a local law that was passed last year when I was away—I haven't seen it—which authorizes the county tax collector to vaccinate for rabies at the same time he collects the county tax on the dog. There is just one fee for that, and he has increased the revenue from the dog tax about four hundred per cent, and it is increasing every year. A great many dogs have been killed. They won't tell me just how many. I know that there have been a great many killed. The public are beginning more and more to look upon paying the dog tax and the vaccination that goes with it as a necessary evil perhaps. A thing that is going to be established just as much as smallpox vaccination is a ninety-nine per cent vaccination of children by the time they get to school.

The point is that if you put money in somebody's pocket who is going to do it, it will be done a little better all the time. Because of the money the tax collector collects the work will go along, not scientifically, perhaps, but it will go along, as long as it is a paying proposition. I suppose that is all very unscientific. (Laughter.)

Dr. A. C. Bulla (Raleigh): I don't want to prolong the discussion. I have enjoyed the paper and the discussion, but I would like this question to be answered, if possible: When will the dog convey his infection to a person if bitten? I mean by that, bitten today—the dog goes mad three, four or five days afterward. What are you going to do about it? When is the dog in a position to convey his infection?

President Foster: I will ask Dr. Moore if he can answer that in just a minute, Dr. Bulla.

Is there any further discussion or any more questions that anybody would like to ask?

Dr. John Symington (Carthage): I would like to ask one question: In those countries where rabies have been stamped out, they have gone in for the muzzling of dogs—they muzzle a dog six months. In this country there is no muzzling. There is no muzzling in North Carolina. I would like to know why. Perhaps Dr. Moore can answer that one?

President Foster: If there is no further discussion, we will ask Dr. Moore to close.

Dr. Moore: Mr. President, answering the question about muzzling, I believe that muzzling just wouldn't work in this state, or in this country. I don't know why. We never have gotten a very satisfactory muzzle. Owners object to them. I think they would object to them more than they would to paying a fee for vaccination.

I don't know whether I can answer Dr. Bulla's last question or not. I don't know whether anybody knows, but it is something like ten days. I know that is what I would say personally if I were involved in it. If a dog had bitten someone, within ten days I would want him to be vaccinated. I don't believe there would be any danger after ten days. I think most health departments, and most regulations provide for the dog to be confined for two weeks, but I shouldn't think there would be any danger after ten days. I am not in position to answer that question. I don't know just how long.

There is one thing Dr. Hudson referred to—more research work—that we have to keep in mind. There aren't any of us who want to do much research work with rabies because it is a disease we don't like to work with. But you must remember that the men who have done research work in rabies have found that it is awfully hard to arrive at definite conclusions for the simple reason that you can't develop rabies in all dogs.

For instance, if you pick out a group of dogs to run an experiment with vaccine, and you use all the care you can to get dogs that you believe are susceptible to rabies, in every experiment that I have ever followed there were a higher percentage of the dogs that they used as checks that didn't develop rabies at all. That makes it awfully difficult to get satisfactory information from the experimental work.

In the Federal Bureau of Animal Industry I know they ran some experiments some years ago on rabies. They used great care in picking their dogs to test out this serum, and they had a very high percentage of dogs that—even with the artificial inoculation, and even putting them in a small cage with dogs that were definitely known to have rabies—failed to develop rabies. That is what makes it difficult to get a value on a vaccine.

Mr. Chairman, I haven't anything further to say except that I do hope this Association will at least appoint a committee that might at least go into this matter of legislation a little further. You have it. You can't put it off. I don't believe that you can repeal this law unless you are going to give them something that is better. I think we can give them something a little better than that. I don't believe the law we have now is the last word, but I know that the attitude in our last four or five General Assemblies has been that they are not going to repeal this law outright. I think they would, of course, modify it. So I do hope that this Association will do that, at least: Appoint a committee with which I might have the privilege of sitting sometime, and go into this a little further.

President Foster: Does that answer your question, Dr. Bulla?

Dr. Bulla: Not exactly. (Laughter.)

I had this in mind, Dr. Moore: If the child is bitten on a certain day, and the dog goes mad three, four, or five days afterward, would you be in position to place the time after he bit the child?

Dr. Moore: Yes, I would say so, up to ten days, if it was my child.

Dr. Roy Norton (Raleigh): In studying for a paper that I gave here in 1935 on rabies, I had access to reports that Dr. Shaw brought back from the International Conference on Rabies in Paris in 1927. In answer to Dr. Bulla's question, the longest time that they had ever had any report of rabies being contracted from the bite of a dog that later developed rabies, the period in there, was fourteen days. That is, the dog did not show any signs of rabies for fourteen days, and yet was able to pass rabies. Ordinarily four or five days is considered the longest length of time that a dog is dangerous—having bitten a child today, if he doesn't show any signs in four or five days, you can forget about it.

We usually say ten days. We feel that there is a sufficient margin of safety there to take care of most cases. In some places they say fourteen days, possibly on account of this long time in there.

PRESIDENT FOSTER: Is there any further discussion? If not, I would like to recognize another visitor at this time whom I overlooked a while ago, Dr. Hilda Sherriff, from Spartanburg, South Carolina.

Will you please stand? (Applause.)

At this time I would like to recognize Mrs. Lucy Lay Zuber, who is representing the *Survey-Graphic*. She appeared before the Conference of Social Workers a few days ago in this state, and she has asked for about five minutes on our program to tell us something concerning the advancement of public health work through the *Survey-Graphic*.

Mrs. Zuber!

MRS. LUCY LAY ZUBER: I am much interested in this discussion of rabies, because it happens that I helped my husband live through a rabies epidemic last summer back in the State of Ohio. He was a lay chairman, trying to help in the work that each speaker this morning has been emphasizing so definitely: that business of getting an interpretation back to the public of what the problems are that confront us as public health people. That is the reason why I asked Dr. Foster and other people here in the State of North Carolina, after spending a morning in the offices of the State Board of Health, and Education and Public Welfare, if I might have a few minutes this morning to do something in trying to see that more spots in North Carolina make use of a publication which is put out by Survey Associates, which is a non-profit, coöperative publishing organization to which belong many people whose names I am sure would be most familiar to you, whose one job is to try to search out the most interesting material that comes out in some of the various fields of research, who try to get it into as interesting a form as possible, and to put it in the hands of people such as you in the fields of public health, and others in other angles of public welfare, so that you may use it, and find that the material is put in as interesting a form as possible.

I was reminded, as you were talking about this problem of control of rabies, of a story about the man who was met on the street by a friend who said, "Why, Dan, what are you doing back in town? I thought you took that job running the lighthouse."

"Well," he said, "I did. I went out there, but it only lasted one day. I went out there and the fog started to roll in. I pushed one button on one of those contraptions and a horn started making a lot of noise that nearly deafened me. I pushed another one, and a beam of light started going on which nearly blinded me. And then," he said, "the darn old fog still kept rolling in, and I came home." (Laughter.)

The thing that I think of so often as I go around and find people in various parts of the country getting a little discouraged on some particular job as it relates to the whole scheme, is that we expect the fog to stop coming in, instead of sticking to our job of keeping the horn blowing or keeping the light going.

I think that the *Survey's* job is to try to do both: perhaps keep the horn blowing and keep the light shining, in trying to bring you some of those materials.

I have copies of the *Survey* in its two forms over here on the table in the corner of the room so that you can refer to them later, so I won't have to take more of your time now to tell about them—the *Graphic,* the *Mid-Monthly,* and the *Journal of Public Health Nursing,* and also some cards which give you special rates that are standard and are made possible, covering half the cost of the publication, due to the fact that 1,800 people do keep the *Survey* going for your benefit.

This happens to be the Twenty-fifth Anniversary year of the *Survey,* and we are trying particularly to extend that very small group of 25,000 people into a much larger group.

I want to tell you of one project which the *Survey* has done in the last several years, which I know all of you know about, whether you know the *Survey* or not. That is this time-worn copy which many of you, I am sure, have seen of Dr. Parron's article on syphilis, which he got out and published simultaneously by a special arrangement which he made with *Readers Digest* in July 1936, called, "Syphilis, the Next Great Plague to Go."

He has just followed that up with an article which he has promised us for well over a year. I have been telling people every month almost that this was coming out the next month. Finally it came through in April. I have a few copies that I would be glad to give to any of you who stop at the *Survey* table. If any of you take advantage of the cards which are on the table in the corner, and start getting the *Survey,* have it come to your offices and to your homes, in order to use the material that is there, I will be glad to see that you get an extra copy of that article.

Dr. Knox tells me that he hopes to use some of it here in North Carolina anyway, I think. The article by Dr. Parron is called, "No Defense For Any of Us." It happens to be based on a study of health among the Negroes, and the high incidence of tuberculosis and syphilis among the Negro group. But he doesn't stop at that point. It is keyed entirely to the whole field of public health for all of us, as we try to move forward into an interpretation of American democracy.

Some of the things that are coming ahead include a very interesting article on the problem of leprosy. I was interested when I heard someone mention the Rockefeller Foundation. I know all of us have had our interest piqued by Dr. Heisler's book. Some of the other things we have had lately include an article on the common drinking cup which your president mentioned this morning. The current copy of the *Survey* has an article on this Elixir Sulfanilamide, or whatever it is, which was so widely quoted through the press, and which I think is a dramatic way

in which the public has become acquainted with some of the problems connected with public health.

Those are just some indications of the material that we try to keep coming to you month after month in the form of the *Graphic* and *Mid-Monthly*. There is a story about the man who got up to preach and he preached on salvation. Those of you who may remember my father, Dr. Lay, who used to be at St. Mary's, will perhaps realize why I use a joke that brings in a minister.

This man preached on salvation, and when he got through he called on someone in the front of the congregation to get up and to pass around the plate and take up the collection. Just as they started somebody raised his hand and said, "Excuse me, but you just preached on salvation. You just said salvation was free."

He said, "Well, salvation is free, and water is free. But when we pipe it to you, you have to pay for the piping." (Laughter.)

The good news about paying for the piping of the *Survey* is the fact that we charge just half of what it costs to print. We hope there will be many of you who will take the time to look over some of the copies, and who will start having that particular brand of salvation—if we want to call it that—coming to you, to help do that job of interpretation to the person down the line.

Thank you, Dr. Foster. (Applause.)

President Foster: The next paper on our program is "County Control Program for Tuberculosis in North Carolina," by Dr. J. S. Denholm and Dr. P. P. McCain.

Dr. Denholm then presented his prepared paper entitled "County Control Program for Tuberculosis in North Carolina." (Applause.)

COUNTY CONTROL PROGRAM FOR TUBERCULOSIS IN NORTH CAROLINA

By J. S. Denholm, M.D., and P. P. McCain, M.D.
Sanatorium, N. C.

While material advancement has been made in the conquest of tuberculosis in North Carolina, the complete control, or more preferably the eradication of the disease, remains as yet far beyond the view of those people who are intimately associated with the present conditions in this state.

It becomes increasingly evident that the existing state facilities will require the inauguration and coöperation of county units, whose efforts will be confined to more restricted geographical areas. These smaller units will be capable of more efficiently ferreting out the existing cases of tuberculosis within their boundaries; and they should be so organized as to provide facilities for the isolation of these cases until the over-

taxed state institutions are in a position to accept them for treatment. Nor should their efforts be confined to the isolation of positive sputum cases, but facilities should be available for the observation and periodic reëxamination of all persons known to have been exposed to tuberculosis, and of all persons suspected to be suffering with the disease. All of these recommendations are a part of the state program itself, but unfortunately it cannot delve down into each community with the continuous and relentless perseverance necessary to bring all of the existing cases under observation. And since the state program cannot assume the responsibility of providing the custodial institutions necessary to care for cases unsatisfactory for Sanatorium treatment, it becomes obvious that the solution of the entire problem is the joint responsibility of both county and state. Therefore, it behooves the counties to institute their own definite program, and, along with the assistance of the state educational, diagnostic and therapeutic facilities, wage an unceasing campaign for the extermination of the disease.

In this state we have found that the most satisfactory method for the promulgation of this program is through the organized health department under the supervision of the director of this unit. He, as a physician, and as a member of the County Medical Society, is on intimate acquaintance with the practicing physicians, and hence is in a position to present his program to them, and to receive their individual and collective support. Since most of the cases are first seen and differentiated by the general practitioner, it is obvious that his whole-hearted support is of superlative importance to the success of the entire campaign.

There should in every case be organized a County Tuberculosis Society. The prime object of such an organization, which is composed of public-minded individuals, is to procure financial assistance for the local authorities actively engaged in the anti-tuberculosis campaign. This group of men and women may be instrumental in whipping up public interest to the realization of the necessity of expansion of the facilities available for the campaign. This group can give invaluable assistance in the educational programs, and supervise the annual seal sale which is usually the chief source of income.

It is essential that all cases of tuberculosis be reported to the local health department, and hence to the State Epidemiologist regardless of their social status. In this way the education of the unfortunate individual can begin either through the physician himself or through the public health nursing service. There still exists among a considerable group of people the feeling that a stigma is definitely attached to a diagnosis of tuberculosis with resultant loss of social standing. Only education derived from the above mentioned sources can overcome this erroneous idea and place the patient in such a frame of mind as to assure coöperation leading both to recovery of the patient, and to the protection of the family and the community at large.

Every case of tuberculosis should be placed under adequate and continued medical supervision. Regular visits from the public health nurse are by far the superior method of continuing the education of the patient, along with the periodic visits from the physician. After the cooperation of the patient is secured, these visits are cheerfully anticipated by most patients regardless of their economic status. Not only must the education of the patient be carried on to a high degree, but also the education of the family is highly essential. In every case patients should go to their family physician for diagnosis, and should be urged to go to private Sanatoria for immediate treatment where financial resorces are available.

When a case of tuberculosis is diagnosed in a family, it is advisable that all the remaining members be given the tuberculin test regardless of age. While a very large proportion of adults show a positive tuberculin reaction without any evidence of clinical disease being demonstrated by further study, it is nevertheless usually much easier to have these contacts submit to further and periodic examination when the presence of the infection has been demonstrated.

The mass survey of school children by tuberculin testing* followed by roentgenographic chest studies of all positive reactors, we consider the most satisfactory method of uncovering the presence of disease among this age group. It has been the experience of the Extension Department of the North Carolina State Sanatorium** over a period of ten years during which tests in excess of 200,000 were made, that a positive reaction may be anticipated in approximately fifteen per cent of the white children, and twenty per cent of the colored children. In rural areas this will run somewhat lower, while in urban communities a higher percentage may be expected. However, where any school group shows a marked increase over this average, or over the average of similar school groups in the same community, an existing focus is almost always uncovered. This was most forcefully demonstrated in a recent incident which occurred in an urban community in this state. Following the diagnosis of advanced tuberculosis in a grade school teacher, the children of the entire school were tuberculin tested. The average of positive reactors was sixteen per cent for the entire school, while forty-three per cent of the children in this particular teacher's class showed the presence of infection with the tubercle bacillus.

Such a survey usually gives rise to considerable anxiety among the parents of children showing a positive reaction. It has been our policy to notify the parents of the presence of a positive reaction in their child with an explanatory letter regarding the interpretation of the test, and also the advisability of X-ray study of the child. This, in most cases, alleviates the anxiety which has been engendered, and assists

* 0.1 cc. 1:1,000 dilution of old tuberculin intracutaneously.
** Biennial Report of The North Carolina State Sanatorium, June 1, 1936.

greatly in obtaining the coöperation of the parents in the further studies which are necessary.

In previous years the extension service of the North Carolina State Sanatorium has sent clinicians into the various counties to make tuberculin tests. However, with the marked increase in health units throughout the state, and the commensurate increase in requests for such service, it has become a physical impossibility for the department to hope to cope with these demands. Therefore, we suggest that the health officers, themselves, make these tests in the schools. Arrangements can usually be made with a nearby hospital for the use of an X-ray machine for a nominal sum to defray the cost of the current used in making the pictures. The services of technicians, specially trained in the technic of making chest plates, may be procured on request from the extension department of the North Carolina State Sanatorium. These men carry their own X-ray tube with them for use on these clinics since this is the only part of the X-ray machine which may easily be damaged. These films will be brought back to the North Carolina Sanatorium, processed, and then interpreted by the staff clinicians. All necessary report forms and educational literature will be supplied along with the above services without charge.

The routine fluoroscopic study of such reactors we have found to be much less satisfactory, partly because of technical difficulites associated with the structure of the portable machines, and more particularly due to the difficulty of making accurate diagnosis of primary lesions, especially when in the inflammatory, and hence most important stage of initial-infection cases.

Such a study as above outlined, and which we designate as a Children's Clinic, represents an excellent method for beginning the campaign against tuberculosis in any county. Following the disposal of all active cases uncovered, and the dispensation of the necessary advice in primary infection cases with the view to prevent the re-infection type of disease, a systematic survey of all the homes in which one or more of the positive reactors was found should be made by the public health nurses. In many cases, observation alone of the inmates of the different homes will suffice to aid the nurse to make up her list of tuberculosis suspects. These people, along with known contacts, that is people who have lived with and have been intimately associated with contagious cases, and with suspects referred by the practicing physicians, will form the nucleus of a fluoroscopic or adult clinic.

At present the extension service has two portable fluoroscopic machines available for this work. We shall shortly increase this to three machines and place another man in the field. Under this system each man can examine approximately forty patients daily. This service is also available on application to the Extension Department of the North Carolina State Sanatorium. While the diagnosis of tuberculosis is of

fundamental importance in the campaign, it however represents only the starting point for the solution of the problem. The interval between such clinics in any community must be of considerable duration due to the extensive territory to be covered by the clinicians. Therefore, we feel that the anti-tuberculosis set-up in each community should provide for more frequent diagnostic clinics, either at weekly or monthly intervals depending on the population of the districts. These clinics should be under the supervision of, preferably, a local physician who has had special training in modern chest diagnostic methods. However, if such a man is not available, the problem of such diagnostic clinics should be assumed by the health officer himself. A very satisfactory arrangement has been made by Dr. W. P. Richardson of the Orange-Person-Chatham Health District. Dr. Richardson has a stationary fluoroscopic machine set up in a trailer and holds monthly clinics in each of the three health centers of his district. The necessity of such efficient diagnostic facilities is illustrated by the fact that of 65,000 patients in the different Sanatoria in 1936 only thirteen per cent was admitted with a classification of minimal tuberculosis, while over sixty per cent was in the far advanced stages of the disease before diagnosis was made. The tendency to await the onset of the symptoms, plus the difficulty, and only too frequently the impossibility to pick up early tuberculosis by routine chest examination, is largely responsible for this unfortunate condition. Only by education of the public to the fact that early tuberculosis is asymptomatic, and warning all contacts of the necessity of seeking immediate and periodic fluoroscopic or roentgenographic examination, will the early diagnosis of cases be increased. The North Carolina State Sanatorium is willing at all times to have private physicians or health officers interested in learning the technic of fluoroscopic and other studies to come to the Sanatorium for assistance and instructions in this work. A similar service is open to the public health nurses to further their knowledge of the nursing care necessary in cases of tuberculosis. The follow-up work of all cases newly diagnosed, and all cases discharged from the Sanatorium to continue further treatment at home, is most efficiently handled by the public health nurses.

The State Sanatoria, regardless of their recent marked increase in bed capacity, are filled to overflowing, and have a waiting list of some months' duration. At present there are approximately 1,500 institutional beds for white, and 400 beds for colored tuberculosis patients available in this state. The U. S. Public Health Service estimates, that for adequate care of tuberculous patients, there should be available at least two beds for each death from tuberculosis in the state. There are approximately 2,000 deaths annually in North Carolina from tuberculosis. Thus it is evident that we have as yet less than fifty per cent of the number of beds which we need to adequately cope with the problem.

Therefore, with the diagnosis of a new case of tuberculosis in a county, a new problem confronts the health officer. If the case is favorable for Sanatorium treatment, and the home conditions are such that it is impossible to institute proper isolation of the patient from the remaining members of the family, what facilities has the county to offer the contacts to help them in their fight to remain healthy until the facilities of the state institutions are available to assume the responsibility of the problem? Or if the case is so far advanced that institutional care can no longer offer anything to alter the hopeless prognosis, is this poor unfortunate individual to be left in his overcrowded home without the comforts necessary to make his last days tolerable; to be a certain source of infection to everyone about him, and hence the source of a greatly magnified expense to the county authorities? If no such place of isolation is available, it behooves every county to provide some sort of custodial home for these people, and only a far-sighted and open-minded view point on the part of all of the authorities concerned will successfully solve the problem. The coöperation of the health unit, the county tuberculosis society, and the county commissioners, along with the complete understanding of all the angles of the problem by the community at large is necessary in the erection and maintenance of such a local custodial home. Sixteen such county isolation centers are at present being maintained throughout the state.

If funds are available it would be ideal if each county, or an aggregation of adjoining counties, could provide a first class sanatorium to extend immediate modern therapy prior to admission to the State Sanatoria. In many cases the ultimate term of disability would be greatly decreased. A few such institutions are operating in this state at the present time under the supervision of a full-time resident physician. As a temporary makeshift while a custodial home is being provided, Burr cottages may be constructed at a very small cost. However, at best they represent a poor substitute for the supervised care of a custodial home, since usually the people who are relegated to these makeshifts are of such limited intelligence and so lacking in means that proper isolation and care of the patient is not procured.

To summarize then the control of tuberculosis in a county requires the persistent and diligent endeavors of all county, medical, public health and lay organizations, aided by the facilities which are available from the state forces which are actively concerned with the campaign against tuberculosis.

A definite program such as that outlined above should be prepared and followed through by the different agencies concerned.

Definite understanding should be had of the responsibilities which lie with the county organizations, such as diagnostic clinics, custodial homes, and nursing service. The Extension Department of the North

Carolina State Sanatorium is ready to provide childrens' and adult clinics, educational facilities for physicians and nurses interested in tuberculosis work. X-ray consultation is available to any physician who wishes to submit roentgenograms to the Sanatorium for interpretation. An out-patient diagnostic clinic is a permanent feature of the Sanatorium set-up. This clinic has such heavy demands made upon it, however, that patients can be seen only by previously arranged appointment. It is the hope of the department that within a reasonable number of years the facilities of the Sanatorium will have been so increased that patients suitable for such treatment may be admitted to these institutions immediately following diagnosis.

President Foster: I will ask Dr. S. B. McPheeters to open the discussion on this paper.

Dr. S. B. McPheeters: Mr. President, I think this Association is to be congratulated on having presented to it a paper so vital to the public health, and presented by authors whose experience is so large and whose achievements so distinguished.

I believe Dr. Parron said, certainly he is quoted as saying it, as late as 1936, that tuberculosis is our chief public health problem. It certainly must be considered one of our major public health problems in view of the fact that tuberculosis causes more deaths in the age period from birth to twenty-one than any other communicable disease and is still the leading cause of death in the age period from fifteen to forty-five.

This is economically and biologically the most important period of life. Heart disease, pneumonia, cancer, nephritis, cerebral hemorrhage, which lead tuberculosis in their total toll on life, still allow us a lease on life for four or five decades before they kill us. But with tuberculosis life ends before forty years of age for those who have it, the majority of them.

Furthermore, tuberculosis is said to account for thirty-five to forty per cent of broken homes in our larger cities.

I believe our provision for tuberculosis in North Carolina—it is true elsewhere—is totally inadequate as is evidenced, I think, by a statement made by Dr. Denholm that there are about 2,000 deaths annually in North Carolina and that we have made sanitarium provision for about the same number. We care for that number only, annually.

The Framingham demonstration found that there were nine active cases, and as many more inactive cases with potentialities for reactivation of every death. That has been reduced about seven by most current observers, six or seven, but at that rate we have about 25,000 cases in North Carolina.

The fact that the central institutions can't care for all these cases

now or ever is obvious, I think, and the necessity for local provision is equally as plain and pressing.

Our present knowledge of tuberculosis points to two pivotal procedures upon which the control of tuberculosis hinges. Those procedures are, first, the discovery of cases while yet in their latent or minimal stages and their cure if possible; and second, the recognition and control, through cure or isolation, of open or communicative cases.

The tuberculosis problem has some advantages over the syphilis problem and some disadvantages. Practically all the people of North Carolina pass through the schools. During the school age range a large part of persons who ever become infected become infected, and furthermore, I found in that age period a large part, an overwhelming part of cases of childhood tuberculosis, and some of the cases of latent and minimal tuberculosis, indeed, tuberculosis within the school range, is still approaching its highest level of toll on life. So that the school group gives us an organized accessible group upon which to work.

The Saranac group of observers, and I think other authoritative observers, concur in this opinion, that if an infected person passes the age of twenty-five years without x-ray or clinical evidence of adult or destructive tuberculosis, such a person is unlikely to manifest destructive disease at any later period. So that that age period is the period upon which we must center our attention and comb for cases of infection and disease, which somewhat limits our problem.

Classifying our population occupationally we find that unskilled workers have the highest death rate, skilled workers the next highest death rate, clerks and persons who may be so classified the next highest death rate, and agricultural workers the next highest death.

It seems to me this has some practical importance in this present consideration, in that the public health forces have access to such groups, even the agricultural workers, because we can gain access to them through the home demonstration agents and other organized activities. We must work with organized groups, and we have access to organized groups that will enable us to control the tuberculosis problem.

I think Dr. Denholm has very wisely refrained from presenting a rigidly formulated control program for counties. It is impossible to formulate such a program. The program must vary with the local situation. He has, however, stated the essentials which any sound program must contain, an adequate case finding program, a curative program, and an educational program. The case finding program must be coextensive with the occurrence of the disease and directed towards the groups mentioned, I think. The method is tuberculin-testing and x-ray of positive reactors. The logical agent in the first instance is, I believe, the local health department.

The curative program must include the institutions that he has

mentioned: First, the home. We have gotten away from the home in tuberculosis, and rightly. Every active case should, I think, have a period of sanitarium training and observation and cure. But most cases of childhood tuberculosis can be cured in the home. Many cases of adult or destructive tuberculosis must be cared for in the home prior to and after sanitarium care, and some cases of latent and minimal tuberculosis may be comfortably cared for in the home.

So I think that with our control program working properly the control of tuberculosis will revert more in the future than in the past to the private physician aided by the local health department.

One of the other two local institutions that are needed is the local county home sanitarium. The county sanitarium can care for a person so far as his maintenance is concerned, for about sixty-six cents a day, which is less than the rate at which the state sanitarium can care for him. Furthermore, the state sanitarium doesn't take incurables, and we must make some provision for them. Many of them, most of them, perhaps are open cases. The state sanitarium has a waiting list, and persons must wait. After they have a period of sanitarium internment they must come back. Not all of them can be returned to the home. So I think we need a county home sanitarium as a necessary institution in this program.

Then we need local clinics for diagnostic and prognostic and curative purposes, and those clinics must be equipped with x-ray facilities. The local clinic, I think, may give pneumothorax to a good many selected ambulatory cases. In the educational program, of course, the state sanitorium will be the capstone of our institutional hierarchy.

The educational program, aside from education of the public in general and the specific groups we have mentioned, should, I think, make provision for the education of the county health officer, county health nurses, and for the local clinics. I believe it should be required and provided for, that county health officers spend a certain period—Dr. McCain is willing and has invited this—at the sanitarium and receive training. We must have trained men to take care of this problem. In fact, the trained medical man is the one indispensable factor in tuberculosis, in its care and its cure, and the x-ray is about the chief indispensable and usual facility, aside from the bed and the pneumothorax needle.

I think this is a very vital problem we are considering here, and I should like to express again my great interest in the paper that has been presented, and my sense of its great importance to the health of the people of North Carolina.

Thank you. (Applause.)

President Foster: Is there any further discussion of this paper? Dr. McCain, would you like to add a few words?

Dr. P. P. McCain (Sanatorium): Mr. President, I think it has been emphasized already that it is exceedingly important to find tuberculosis early if you wish to cure the disease, but that is so absolutely necessary that I hope you will pardon me if I further emphasize that thought.

Dr. Denholm said in the paper that there were only 13 per cent of all the cases admitted to the sanatoria in this survey by the American Medical Association that were in a minimal stage. Well, that means that only 13 per cent of those admitted to the sanatoria had not been in the infectious stage before they reached the institutions. If we are going to wait until the patients are moderately advanced or far advanced before they are discovered there is just absolutely no hope of our controlling the disease. And so long as we wait for patients to develop symptoms of the disease before they are studied we are not going to improve the present situation, because early tuberculosis is comparatively rarely accompanied by symptoms.

Through the tuberculin testing and the x-ray of the positive reactors we do have a method by which we can discover tuberculosis in the earlier stage. We can't test everybody, of course, and we can't x-ray just everybody, but we can select those particular groups who are most likely to have tuberculosis. The first group that we should study are the contacts or the known cases. They are the ones who not only have slight tuberculous infection, but those who have been getting overwhelming infection in the homes of positive sputum patients.

If we concentrate on that group and examine them, not just once, but at least every year, it would do some good. We don't have to tuberculin test them every year. We can give the tuberculin test to them one time—practically all of them will come out positive—but it is important to give the test anyhow to both adults and children. If an individual looks perfectly healthy and feels perfectly well, he is going to snort at the idea of his having tuberculosis, but if you give him the tuberculin test and let him see that he has a positive reaction, and you tell him that that means he has live tubercle bacilli in his body, he will be willing to do something about it.

So if we give the tuberculin test to these contacts and then x-ray the positive reactors we will find that there will be more in the minimal stage than just 13 per cent. If we make that our procedure and reëxamine them every year, I think it won't be a great while until we will be able to do very much, as the Metropolitan Life Insurance Company has done, and just absolutely reverse those findings. It is exceptional with the Metropolitan Life Insurance Company's large group of thousands of individuals in their home office to find tuberculosis beyond the minimal stage.

I would like to emphasize again the fact that the fluoroscope, the modern fluoroscope with its new screen and with a fine focused tube operated by somebody who is experienced, can discover tuberculosis in the minimal stage.

It is our practice to recommend that all the suspicious and all the positive cases that are discovered by the fluoroscope have x-ray pictures made, and we find that that is only necessary in about one out of fifteen.

So that the expense, after you once purchase a fluoroscope and have to have a trained man to operate it, of such a procedure as we are recommending is not very great. Even if you discover one or two cases in a clinic it will more than repay the county and the state. Instead of that individual having to go to a sanatorium and spend months and months and months, probably, taking pneumothorax and probably an indefinite time of bed-rest requiring nursing and physician's care, and oftentimes expensive operations, instead of all that, if you find them in the early stages, many of them can stay at home, quite a number can continue with their work, practically none of them are contagious to others, and they can be cured in a short while with little effort without ever having been sick, instead of facing the problems of advanced consumption, both for the individual and for the public.

I want to emphasize again, too, that we are delighted at the sanatoria to have any private physician or any health officer in North Carolina come and stay with us as long as he would like to, without any charge for his board or room or laundry, and study tuberculosis with us, any phase of it that he would like to. We are particularly anxious to teach those who are interested in learning fluoroscopy so that they can have a setup in their own county to study these contacts and the groups that Dr. McPheeters emphasized so well, the ones who are most likely to have it. In addition to the ones he mentioned, I should like to mention school teachers. I think there should be a law requiring every school teacher in North Carolina to have either a negative tuberculin test or a negative fluoroscopic or x-ray examination.

We also should have food handlers, nursemaids, personal servants and others who come in contact with the public take the same test. If we can institute such a program as that I think it won't be so long before tuberculosis can really be brought under control. (Applause.)

President Foster: Is there any further discussion?

Dr. N. Thomas Ennett (Greenville): Mr. President, there is one point in connection with the control of tuberculosis that I haven't heard mentioned this morning. All of us recognize, those of us who are doing public health work, that we can only be successful in so far as we are able to inform the people or educate them. Therefore, the logical place to begin is in the school.

We also know that poverty goes along with tuberculosis, or, to put it another way, tuberculosis is most commonly found where we find poverty. We also know that malnutrition in school children is more often associated with poverty than not.

If we are going to control tuberculosis, it seems to me we must attempt to control malnutrition. In general, about 15 per cent of the children in school are suffering from malnutrition. Probably 90 per cent of the people who die of tuberculosis at some time have suffered from

malnutrition, perhaps in childhood, and perhaps in early adult life. There is something about good nutrition that raises one's resistance to tuberculosis.

There is one thought I want to leave with the health officers and that is to do their best to put on a good nutritional program in the public schools. When you have done that you have done a lot toward controlling tuberculosis. (Applause.)

President Foster: I see we have with us Dr. R. L. Carlton, the Managing Director of the North Carolina Tuberculosis Association. Dr. Carlton, would you like to say a few words?

Dr. R. L. Carlton (Winston-Salem): Mr. Chairman, I don't have anything of particular interest to say at this time.

I thoroughly appreciated Dr. Denholm's paper and am glad that he emphasized education.

I just want to add to that that the voluntary organizations such as the local county tuberculosis associations can help the local health departments and the local sanatoria to a very great extent in educating the public regarding tuberculosis. In North Carolina we only have seven local tuberculosis associations in the counties. I was surprised to find that we didn't have more, but replies to questionnaires sent out in the last two months indicate that there are only seven associations in the counties that may be termed real local tuberculosis associations.

We have committees in every county in the state which are interested in tuberculosis, and which were interested last fall in putting on a Christmas seal drive. Every county in North Carolina was organized last year in the interest of the Christmas seal sale, and that is a step toward securing local tuberculosis associations throughout the state.

The North Carolina Tuberculosis Association is just in the act of employing a full time managing director. I am only pinch-hitting until that man is found. I am hoping that he will be located and secured in the next few weeks. One of his first duties, if he follows the instructions of the board of directors of the North Carolina Tuberculosis Association, will be to spend a great deal of his time organizing the counties in local tuberculosis associations. Those associations can go a long way in this matter of education regarding tuberculosis. (Applause.)

President Foster: Is there further discussion?

Dr. J. C. Knox (Raleigh): Dr. Smillie is with us, and I think possibly he may have something to add. (Applause.)

President Foster: Dr. Smillie, we are very glad to have you here.

Dr. Wilson G. Smillie (Cornell University Medical School): The whole story of tuberculosis control is changing so fast that it is pretty hard to keep up with it.

There are three points I thought you might be interested in this morning in relation to this changing point of view.

One is the tuberculin test. You will find in all the textbooks the statement that all adults have a positive tuberculin, and most children, so it is practically useless to use the tuberculin test as a clinical test. That was true a few years ago, but it is not so any more, and I venture to predict that within our own lifetime the tuberculin test will be a useful diagnostic clinical test in adults as well as in children.

We have done extensive tuberculin testing in college students. They, of course, are a selected group, so that it is not exactly fair to use them as a comparison as a sample for the country as a whole, but the truth is that young men and women now reach adult life and enter college with a very low percentage of positive tuberculin, which is certainly an encouraging sign.

In the Middle-West the University of Minnesota has the best record in this regard. They find that when college students come to that university less than one-fourth, less than 25 per cent, have a positive tuberculin test. Even when young men reach the age of entering medical school—they certainly are adults then; if they are ever grown up they are grown up then; they are usually around the age of twenty-one or twenty-two years—we find that on the average these young men now entering medical school have a positive tuberculin test in less than 50 per cent of the cases. That is an extremely interesting finding. This is a positive tuberculin test, you understand.

The highest tuberculin test is found—the highest percentage—in those young men who come from the large Eastern industrial cities, that is, the statistics with reference to the medical students entering medical schools. The next highest group are the men who come to us from the South, and the lowest group are the men who come from the great open spaces in the Middle and the Far West.

So that I urge you, and you have already heard it urged this morning, to use the tuberculin test more and more and to rely more and more on it as a diagnostic test, a useful clinical test even in young adults.

The second point that I wanted to bring out was the fact—you hear it frequently said—that a state in order to control tuberculosis should have two sanatorium beds per annual death. That was true not many years ago, but again the picture is changing extremely rapidly. It now looks very much as though a community will need a smaller number of beds per annual death to cope with the situation. The reason, of course, is the introduction of the collapse therapy, because the hope is—and it looks as if it is a very real hope—that as collapse therapy is utilized more and more it will be possible for the individual to spend a shorter and shorter time in the sanatorium, and spend more and more of his time at home. As you develop the program that you have outlined this morning, with fluoroscopes in the local communities and

doctors trained to do collapse therapy, then it seems quite possible, at least this is what the experts tell me, that these patients can return to their local communities, become closed cases by collapse therapy, and the continuation of their treatment be carried on at home, rather than remain in the sanatorium for as long a period as we used to think was necessary.

The third point that is interesting, and it certainly was an eye-opener to me is this: You hear it frequently said that the Negro is naturally highly susceptible to tuberculosis. A man named Kahn did some extraordinarily interesting work among the bush Negroes of Dutch Guiana.

These Negroes, as you remember, were formerly slaves. About a hundred years ago they revolted, killed their masters, and fled to the interior, and there they have lived ever since, out of touch with the white man. Kahn went into that territory and studied these Negroes. They have gone back into the forests and live almost like wild animals, under natural conditions for them. The extraordinary thing is that tuberculosis has died out among those people. They are now tuberculin free. So that if they live in the forests under the natural conditions they seem to thrive. Tuberculosis in the Negro is not due, apparently, to any special susceptibility on his part but due to the conditions under which he lives and his ignorance and inability to understand the necessity for avoidance of contact with open cases of tuberculosis.

He found tuberculosis in only one little Negro settlement up that river, and in this instance the man had come down to the river to trade at the white station, had gone as a guide with some gold seekers, and there was a man in this gold seeking outfit who had tuberculosis. This Negro had brought it back to his community. Everyone in that little village where he lived had a positive tuberculin test.

Those three points, then, are to me at least quite interesting, in the changing understanding of the picture of tuberculosis as a community problem. One is the increasing value of the tuberculin test. The second is the increasing importance of collapse therapy in closing up the open cases and making the hospital stay shorter. And the third is the point that Dr. Kahn brought out, that the Negro as an individual is not naturally highly susceptible to tuberculosis. Apparently the conditions under which he lives make him a victim rather than any particular susceptibility of the race. (Applause.)

President Foster: Is there further discussion?

If not, we will ask Dr. Denholm to close.

Dr. Denholm: I don't have very much more to say except to confirm what Dr. Smillie said regarding the tuberculin test. During the last two years I have done quite a number of tuberculin tests on teachers, and in several hundred of those that were tested in the eastern part of

this state, I found that fifty per cent showed a positive reaction. The average age of those teachers was thirty-one.

I believe that is all I have to add.

President Foster: At this time, I would like to recognize Dr. Milton J. Rosenau who has just come in. I would like him to stand. (Applause.) Feel free to help us out at any time, Doctor.

Our next paper, "The Public Health Aspect of the Sanitation Problems Created by the Touring Public," is by J. M. Jarrett, Consultant in Sanitary Engineering, State Board of Health.

Mr. Jarrett!

Mr. J. M. Jarrett then presented his prepared paper entitled, "The Public Health Aspect of the Sanitation Problems Created by the Touring Public." (Applause.)

THE PUBLIC HEALTH ASPECT OF THE SANITATION PROBLEMS CREATED BY THE TOURING PUBLIC

By J. M. Jarrett
Consultant in Sanitary Engineering Division of County Health Work
N. C. State Board of Health

It is particularly timely at this season of the year to turn our attention to several of the public health problems created by the touring public and consider for a few minutes just what action is being taken on the part of health officials elsewhere in meeting these problems and at the same time to discuss ways and means of handling similar problems in this state.

Man, being the migratory animal that he is, continually fosters the urge within himself to go new places and see new things. Confinement irks him especially in the spring. In former years the vacationist and tourist had to depend upon rail or steamship transportation to carry them away from the hum-drum of everyday life for a few weeks' rest and recreation. Consequently they took refuge in concentrated groups at points easily accessible to centers of commercial transportation. But the tremendous expansion and development of highways and recreational centers has opened up a new and interesting phase of living, not only for the thousands who formerly were not allowed this privilege because of financial circumstances, but also for those perennial travelers who are constantly moving to other places. This mode of living, in many respects a very healthful and stimulating activity, has also brought with it innumerable problems in sanitation for the health officials to cope with in the protection of these carefree nomads.

And there can be no question about the necessity for the health officials assuming the lead in the handling of these problems. Or, as Dr. K. E. Miller of the U. S. Public Health Service has expressed it, "Such

a discussion as this might be titled 'Man's Faith in His Fellow Man!' On the trail every drop of water drunk, every meal eaten, every bed slept in, and every person encountered is a potential source of communicable disease. In spite of these facts, the American Traveler goes merrily on his way with implicit confidence in the thoughtfulness and integrity of those whom he has never seen, to provide the necessary safeguards for his health."

Ten or fifteen years ago the tourist stopped at recognized hotels and made side trips of only one or two days' duration, returning at night to his or her temporary residence. As the highways were opened up and places of interest, which were previously more or less inaccessible, were put in reach of the average traveler, these itinerants took advantage of the opportunity afforded for continuous travel which allowed them to go more places and see more things in a stated length of time. As this mode of travel expanded it brought with it the development of the tourist home, since many travelers preferred to keep moving and spend the night wherever night might overtake them. These accommodations were temporary at best and afforded the minimum in sanitation for the highest price obtainable. They were developed, not to afford protection and comfort, but to meet the increasing demands of the tourist and to produce the most profit on the money invested.

Closely following the tourist home, the so-called tourist camp was the next thing offered to the traveling public as a place in which to sleep and possibly endanger their health. These cottage camps were first located in out-of-the-way places along the trail where other accommodations could not be secured and were usually built in connection with a filling station. From this beginning, they have grown until today they can be seen marring the landscape on practically every main highway in the state. This is particularly true in the mountainous sections and along the seashore routes. In later years many of them have outgrown the purpose for which they were originally intended as the inspection records of the local and state sanitarians will show. Some of these camps, in good locations, however, still advertise "For Tourists Only" and are operated under respectable management and comply with the state hotel and cafe regulations governing the operation of such places. In this connection the State Board of Health has recently made applicable minimum requirements of the state hotel and cafe regulations and have designed a distinctive grade card bearing the green, blue, and red letters so familiar on the hotel and cafe placards, to be posted by the state and local inspectors. Similar regulations and cards have also been developed for use in tourist homes. The summer camps for boys and girls have also received attention and those on the approved list are being operated in a safe and sanitary manner.

In the last two or three years, however, there has appeared on the

horizon another and in some respects a more troublesome public health problem in connection with the sanitation of places used or frequented by the touring public. This problem is the result of the increased use of the automobile house trailer and the trailer camp. It is the public health aspect of this problem mainly that we should consider now.

There is at present a wide difference of opinion as to just how great or how serious the problem of sanitation and public health created by the use of trailers and trailer camps is. Some consider the expanding use of the trailer as a "fad," while others are as strong in their convictions that the house trailer for some presents a new and more economical trend in living. I am inclined to agree with this latter line of thought, my opinion being based on personal observations. It has been noted particularly around large construction projects in this state, the many different types of house trailers being used as a temporary home for the workers while employed on these projects; and many complaints have been received by local health departments concerning the parking of trailers along the highways and in vacant lots. Some experts and statisticians, chief among whom is Roger Babson, have predicted that within the next twenty years one-half of the entire population of the United States will be living in house trailers. This figure seems too large to many of us at the present time, but when we consider the estimates of the number of trailers now on the highways in North Carolina and in other states and study the traffic counts made by our own highway commission, we cannot help but envision such a trend. The State Highway Commission estimates that during the year 1937, between two and three per cent of the foreign cars entering the state on U. S. Highway No. 1 were drawing trailers. And it is further estimated from traffic counts made on this same highway, that approximately 1,300 out-of-state or tourist cars entered the state every twenty-four hours. From these estimates it is safe to assume that approximately 500,000 foreign cars and 10,000 trailers entered North Carolina last year on one main artery of travel. These figures do not take into consideration the thousands of trailers owned and operated by North Carolinians, or the ones traversing other through highways. The Florida State Board of Health estimates that during 1936-1937 season 40,000 trailers were accommodated in the Miami section of Florida, while as many visited the Tampa-St. Petersburg-Orlando sections.

But granting that we have all recognized the increase in the number of auto trailers being used, we should ask ourselves this question—do these trailers create or present a real public health problem, and if so, to what extent? Some people in discussing the public health aspect of this problem are alarmed by the fact that trailers may be strewing fecal matter and other wastes along the highways of the state as they travel from one point to another. This, to my mind, does not

create a problem of any great magnitude or give cause for undue alarm. It must be remembered that with possibly few exceptions the house trailer is not occupied except at night or during stopovers on the trail. During the course of travel the occupants of the auto use the rest rooms and comfort stations provided by the filling stations, hotels and other wayside places. Even if all trailers were provided with toilet facilities, as many of the more modern ones are, they at the most could not create more of a nuisance and public health menace than do the trains which scatter waste and fecal matter along the railway rights-of-way throughout the country. Those trailers equipped with modern sanitary facilities usually empty and clean the chemical toilet cans at some filling station or other point located in uninhabited areas.

Considering the above statements in connection with the fact that the great majority of the trailers stop over night at tourist camps or near filling stations, the problem of adequate or approved toilet facilities on the trailer proper should not give us undue concern. The problem of providing sanitary facilities and enforcing sanitary regulations, therefore, narrows itself down to a consideration of the camp site; for the greatest danger from the public health viewpoint lies in the insanitary conditions and improper location of the camp sites and the lack of proper facilities for use after the trailer has come to rest, and we should interest ourselves mainly with a study of this phase of trailer sanitation.

It follows, therefore, that the public health aspects of the sanitation problems created in connection with house trailers as well as with tourist homes and tourist camps are as follows:

1. Sewage and waste disposal.
2. Water supplies.
3. Milk and other food supplies.
4. Contact infections.
5. Insect borne diseases.

In an improperly located and insanitary camp, the danger of polluting the water supply is always present if fecal matter and other wastes are dumped promiscuously over the surface of the ground. Not only the water supply may be endangered, but there is also the chance of food supplies being contaminated by flies and other insects, as well as by rodents if means are not provided for the sanitary disposal of human wastes. And provision should be made to supply the campers an adequate supply of hot and cold water for other purposes as well as a safe supply for drinking.

Whenever possible, a supply of pasteurized milk should be available for the tourists or campers. This would greatly assist in reducing the number of cases of diarrhea and dysentery so prevalent among summer campers and vacationists.

The trailers should be allowed ample room in the parking space to

minimize as far as possible the danger of contact infections. The crowding of trailers and occupants in limited space is not only conducive to poor sanitation, but greatly increases the danger of the trailer occupants contracting communicable diseases.

The location of trailer camps is also very important from the standpoint of securing protection from malaria, and this item should be given more consideration. Many vacationists return to their homes each year with malaria contracted in improperly located and unprotected camps in malarious sections. Another aspect of the public problem in connection with malaria is that the causative organism is carried back into formerly malaria-free localities, thereby affording the Anopheles mosquito the opportunity to transfer and disseminate this organism among others in this locality. This phase of the problem takes on more public health significance when we consider the fact that the trailer traveler can and does cover great distances in a comparatively short time. Records of endemic outbreaks of malaria are proof of this statement.

Not only malaria but typhoid and dysentery as well are constant potential dangers. The significance of this phase of the problem can be better appreciated when we consider that during 1936 and 1937 there were reported to the State Board of Health 1,011 cases of typhoid fever, and that out of this total of 1,011 cases 741 or 73 per cent were reported during the summer vacation months. All of the trailerites cannot be expected to contract and spread all of the diseases mentioned above, but they doubtless contribute their part toward increasing the morbidity of summer or "vacation typhoid" and other filth borne diseases.

Realizing that sanitation and public health are involved because of the increased use of house trailers, let us consider the different ways in which other states are meeting this problem with the idea of determining just what our policies should be in this state with respect to the sanitation of trailer camps.

In some places the local authorities do not allow a trailer to park over twenty-four hours in one spot unless it is parked in a licensed and properly equipped camp. Other cities have passed regulations prohibiting the parking of trailers within the city limits if they are to be used as temporary residences, while still others have regulations which require that a trailer be considered as a permanent residence if it remains in one spot over a limited time and must be provided with all sanitary conveniences required of homes, namely water and sewerage for the trailer.

The State of Washington has regulations governing trailer sanitation, which require that (1) all wash water, refuse, garbage, and contents of trailer house toilets shall not be deposited upon the surface of the ground or in a manner which would allow the wastes to gain access to a water

supply or any other waters of the state; (2) all built-in toilets in trailer houses shall be provided with leak-proof, fly-tight, metal receptacles for holding human excrement and shall contain sufficient caustic soda or a similar chemical to render the contents innocuous; (3) all tourist or resort camps at which trailers are allowed to park must have a fly-tight depository in which the contents of the chemical toilets may be emptied and provision must be made for the washing of the chemical units in an approved manner; (4) when trailers serve as permanent homes, the use of built-in toilets is prohibited unless the installation meets with the requirements of local and state codes pertaining to the installation of plumbing.

The State Board of Health of Colorado has designed a model layout for a trailer camp and has also developed rules and regulations governing the sanitation of camps which are very complete. These regulations furnished by Mr. B. V. Howe, State Santiary Engineer, are quoted as follows:

Camp Plan

Camps shall provide

(1) not less than 900 square feet for each trailer and automobile, the minimum width being twenty feet,

(2) roads must be at least twenty feet wide and be located at each end or side or each trailer stall,

(3) each trailer location must be clearly defined by markers at each corner,

(4) each location level, well drained, free from rock or heavy growth of brush and weeds; and no trailer shall be located

(a) less than ten feet from other structures,

(b) less than five feet from property line,

(c) less than twenty feet from any public street.

Water Supply

There must be an adequate supply of water approved by the State Board of Health.

Showers and Slop Sinks

Camps shall have one flushing slop sink for each thirty trailer stalls or fraction thereof for the purpose of emptying domestic sewage from trailer toilet receptacles.

One shower bath connection should be provided for ever twenty women or fraction thereof and one for every twenty men or fraction thereof.

Toilets

Camps shall provide toilet units placed in separate compartment inclosed with proper partitions, in the ratio of one toilet unit for women for every twelve trailer stalls and one toilet unit for men

for every twenty trailer stalls in addition to one urinal for every thirty trailer stalls.

Fly-tight privies, approved by this department, may be used to fill the above requirements in unsewered districts.

Refuse and Sewage Disposal

All waste water from trailer sinks shall be wasted into public sewers through approved sewer connections, or into pails, which shall then be emptied into a public sewer or connection with a septic tank. Drainage of water onto the ground surface is strictly prohibited.

Camps shall provide sufficient fly-tight garbage receptacles and rubbish receptacles so placed as to be convenient for the use of Trailer occupants.

Camps shall provide for daily disposal of garbage.

Incinerators for burning of all combustible rubbish may be used.

The Conference of State Sanitary Engineers in coöperation with the Public Health Engineering Section of the A.P.H.A. have devoted considerable time to the study of this problem and have recommended in their progress report that the minimum regulations governing the sanitation of trailer camps contain the following provisions:

1. Definition of trailer camp.
2. Supervision must be adequate and competent.
3. Allotment of space should be 600 square feet per unit.
4. Prohibit open unattended fires.
5. Water supply—requires safe, potable water in adequate quantity and available from convenient outlets. Suggest one outlet for each two camping places and nozzle guards on hoses used for watering trailers.
6. Toilet facilities and sewage disposal.
   a. Convenient, well constructed lighted toilet rooms with proper signs.
   b. Toilets to be located within two hundred feet of every part of of the camp and at least one unit for each twenty-five persons.
   c. Sanitary disposal of sewage and other wastes into sewer systems or adequate private disposal systems.
   d. Slop sinks with can washing facilities.
7. Garbage disposal—fly-tight metal containers, one for each two units. Garbage disposal in an approved manner.
8. Installation of shower baths and laundry facilities.

The above are, of course, basic minimum requirements and can be added to.

Although most of the local health officers have observed the necessity for doing something about the location and sanitation of trailer camps, very little has been done in this state in this connection. Our State Hotel

and Cafe Laws are adequately taking care of the sanitation of tourist homes and tourist camps and protection of the public's health is being provided, especially where we have local health units with competent sanitarians, but we need to develop more sanitary facilities for accommodating the tourists who travel by and live in auto house trailers. If provisions for such facilities cannot be had through means of education and persuasion, then regulations should be adopted and enforced.

In conclusion I would like to summarize the above with a few statements or suggestions as to how results might be obtained. Many states are working on, and already have state regulations and state laws pertaining to trailers; while still other states are now in the process of preparing such regulations; but the most effective work can, in my opinion, be accomplished through the local health organizations. The problem in a state like North Carolina, which annually draws enormous tourist trade, is too large to be conveniently and satisfactorily handled by the State Board of Health. The state, however, could perform an excellent service, especially now when so much attention is being given to advertising the state, by following the lead of several of the other states in establishing roadside watering places, by having appropriate signs erected—calling the attention of the tourist to the fact that the water supply has been approved by the State Board of Health, by aiding in the construction of wayside comfort stations and state camps, and in the promotion of properly located and equipped private camps, at strategic locations where the trailer tourist could park and secure the comforts and safety so necessary in the protection of his health. Until public health workers study and fully appreciate the trailer problem, and make some such move to adequately cope with it, we cannot expect anything except trouble and complaints, and additional health hazards to arise from this increasing use of house trailers by the touring public.

REFERENCES

[1] Progress Report of the Joint Committee on Summer Camps and Roadside Places of the Public Health Eng. Section A.P.H.A. and State Conference San. Engs.
[2] The Menace of Auto Trailers—*American Journal of Public Health,* May 1937.
[3] Trailer Sanitation Regulations, State of Washington.
[4] "Full-time Health Service and Travel Safety," K. E. Miller, Senior Surgeon, U.S.P.H.S., *Civil Engineer,* October 1937.
[5] Public Health Reports, Vol. 51, 1936.
[6] Trailer Camp Rules and Regulations, Colorado State Board of Health, by B. V. Howe, State Sanitary Engineer.
[7] New Sanitation Problems of Tourist Trailers—G. F. Catlett, State San. Eng. Florida State Board of Health.

PRESIDENT FOSTER: We will ask Dr. John W. Williams of Asheville to open the discussion.

DR. JOHN W. WILLIAMS (Asheville): Mr. President, this paper of Dr. Jarrett, this excellent paper, is certainly timely, and it does not apply to the mountains and the seacoasts, as some people may think. I saw trailers parked and tourists' homes advertised in every village

and town I passed through coming up yesterday. North Carolina is a tourist state.

He quotes Dr. Miller saying every visitor is a potential source of communicable disease, but one who goes merrily on his way, confident that someone will provide the necessary safeguards for him. I wonder if Dr. Jarrett dreamed that in that one sentence he incorporated all the responsibility of a well organized health department.

Just think for a moment. If the visitor is a menace he should not go merrily on his way, and certainly we, his hosts, should not allow him to be menaced.

Concerning the tourist home, I am glad he used the past tense. For instance, their development was to afford minimum sanitation for the highest price obtainable. If this statement is true we in Asheville today, in Dr. Jarrett's department, and in my local department, have no one to blame but ourselves. The state, knowing that there are A, B, and C folks, have divided our tourist homes correspondingly, with minimum requirements which are considered safe, for sewage disposal, purity of water, temperature of water, fly and mosquito control. If any visitor contracts or contacts any communicable or infectious disease in any of these homes, the health officer has no one to blame but himself. The home itself is not a trench, and the owner of it can be found, seen, educated, and compelled to carry out our orders. In Asheville the bread, butter, and tax money to pay our salaries depends a great deal on tourists, and we must guard their health just as jealously as we would a visitor in any of our homes.

I do not agree that the tourist camps mar our landscape. I think in some instances they improve it, and what can be more pleasant to a hot traveler than to find after a long ride a cool mountain cabin, with proper sanitation, and to lay himself down to sleep between sterile sheets under two blankets, amid mountain breezes coming through the North Carolina pines? (Laughter.)

I am going to get a bonus for that from my Chamber of Commerce, but seriously, gentlemen, it is something to keep people coming to us. And they will, if we carry out the intent of our State Health Board. I know what is sticking in Mr. Jarrett's craw, and he has a perfect right to dislike it: the trailer. Most of his paper was taken up with it.

None of us are doing so much about it. We have classes in those: A, B, and Z. (Laughter.) You see these trailers coming through, spending a night. We are glad to have them. They are nice people. A lot of them are looking for homes, a lot of them are looking for places to come back to and spend a month or two. They just pass through. Some others will come along. The man will park his trailer and he will go looking for a job. That isn't so hot. We haven't so many jobs for him.

Then we have another man who will drive any kind of ramshackle

trap, park it anywhere and go to work as a day laborer or anything else he can find. And if you don't watch him in two or three weeks he has put two or three soapboxes together and is living in that—and in less than two years he is voting.

We don't want him. I am afraid that Mr. Jarrett's proposal is going to kind of run these tourists into our towns.

Our County Health Officer should be discussing this paper. We don't want the trailers, and those that do come there to spend over forty-eight hours we would like to have go to a camp, not city-owned. I wish it was, because it looks as if we are driving trade to the man who owns the camp, but we do have one or two camps around there that are ideally located, protected in every way, shape and form from all the menaces that a traveler meets in his travels. We think that is the best place for him.

But with the few trailers that we allow to stay over twenty-four hours in the city, we have no fear of those. However, in those big camp grounds there is a public health problem, and it is our duty to see that every safeguard is thrown around those people. Mr. Jarrett demands sewerage connections to those trailers and things like that, but except in Buncombe County, I don't know in what county it will be done. Buncombe is sewered all over, and you can get water all over. That is where our tax money goes. You can go out and shoot squirrels in any part of the county, and while you are waiting for them to appear you are sitting on a water hydrant. (Laughter.)

But I don't know whether that is true or not in the other counties throughout the state, and I am wondering if such a program put out by the State Board of Health is not going to drive them into the cities where they can get sewer connections.

With that exception I have nothing to add to Dr. Jarrett's paper except this: We can protect those people if we want to. It would be fine for the State Board of Health to set a standard that we could incorporate, or have the same thing, in our ordinances, but a local board of health has all the right to demand anything of trailers, tourist homes, or hotels, or anything else that they want to, if we want to throw these safeguards around the people. I think we should begin to wake up and demand them. (Applause.)

President Foster: We will be glad to have lots of discussion along this line. I consider this a very important subject. I would like to have a lot of discussion. Who will be next?

Dr. Gamble (Vance County): We are fortunately, or unfortunately, situated right at the head of the reception line for visitors coming in from Virginia on Route Number 1, and therefore we have tourist camps.

I disagree with Dr. Williams that it will drive them into the city because our tourist camps in the county are all sewage sanitated. That

is, they have what they call a residential disposal system of sewage, which is a septic tank, and sufficient drainage to take care of most any number of tourists. So they don't have to come in our cities to be in nice camps, and well protected. (Applause.)

President Foster: Is there any further discussion?

Mr. Booker, do you want to add something to this?

Mr. Warren H. Booker (State Board of Health): Dr. Foster, Ladies, and Gentlemen: In regard to camp sanitation, with special reference to trailers some statistics compiled by Maine, New Hampshire, and New York State, I believe, indicate that the peak of the trailer population has probably been reached. Certainly the peak in the manufacture of trailers has passed, and the manufacture of trailers in the future seems to be definitely on the decline; in fact the secondhand trailer market is glutted — has been glutted for the last twelve months.

Of course we have those old trailers that have already been manufactured still with us, and will have them for a number of years. By that token we will have the trailer sanitation problem with us as we have had, but I do not believe that the increment in the increase of these trailers is going to be as great as it has been in the past.

The matter of water-carried sewage from these trailers is comparatively small. Ordinarily the census figures indicate that only about three per cent of these trailers are equipped with water-carried sewage. You can readily see the reason why. With these trailers moving on wheels, on rubber wheels, or at least on very temporary foundations, it will be difficult indeed to make a sewerage connection from the commode or any other plumbing fixture permanently equipped in the trailer, to a sewer in the ground. That problem has been taken up a number of times with a request for solution in regard to the way in which to definitely make a connection between trailers and the sewerage facilities that might be provided in camp grounds.

The nearest solution to this that has come to my attention is that we might make some kind of a rubber connection, something similar to what is used in a firehouse, connecting one end to the sewer in the ground, and the other end to the car. So far I have never seen anything practical worked out with that sort of connection.

I believe that in connection with the trailer camp sanitation we are going to have an improvement similar to what we have had in the filling stations. Some of us not nearly as grey and bald as the speaker remember full well when we used to have the gasoline stations along one single tank, along in front of most every grocery store and hardware store. The miniature filling stations of those days have given way to real, honest-to-goodness filling stations now, that have so-called one-stop service, and the old service gasoline tank where they cranked up so many gallons of gas is passé. In fact they are rapidly on the road out, if indeed we might not say they are already out.

I think the same thing is taking place in the matter of tourist camps. The tourist business was forced onto us so rapidly with the oncoming of the new highways and new automobiles, new means of traffic, that we scarcely knew how to meet it.

Mr. President, in your own county there is being inaugurated an experiment in North Carolina in high-grade tourist camps. This camp is being backed by some of the big oil interests, and I believe perhaps the automobile interests, certainly — well, frankly, by the Standard Oil Company. It has their endorsement. It is used on their ground. I think it has their financial backing. I understand the Texaco Company is also planning on similar camp arrangements. These camps are really high-grade camps.

This one will have a dining hall, air-conditioned. They insist that it is not a cafeteria, that it will be a dining hall, and the prices, as they have indicated to me, will be very moderate indeed.

This in North Carolina is the third one to go in, in the country, Number 1 having gone in somewhere in Cape Cod, Number 2 at Roanoke, Virginia, and Number 3 just outside of Fayetteville.

They are beautifying the grounds and building structures there that are really creditable. They have two and three-room cottages with garages attached for their automobiles, with tile bathrooms that are a credit to any hotel or any residence. Part of these cottages, I understand, will be individually air-conditioned. Of course, in connection with that they have other accessories, such as games, and something between miniature golf and ordinary regulation golf, where woods will not be used, but the mid-irons and things like that will be used on the golf course.

However, that has nothing to do with sanitation. In these tourist camps they are providing in your county, Mr. President, they are providing septic tanks and ordinary residential sewerage disposal facilities which in my opinion will make them one of the highest grade tourist camps I know of anywhere.

This seems to have been very successful in Cape Cod and Roanoke, and I understand they are going to provide approximately a hundred of these camps throughout the country, of which North Carolina, we hope, will get its share. In my opinion that type of new construction is going to set the standard for improving our tourist facilities.

In conclusion I do feel this: That in the interests of having uniformity throughout the state in connection with these tourist camps and tourist trailers, I think it would be perhaps the part of wisdom for the Legislature to provide an enabling act to the State Board of Health whereby uniform rules and regulations might be prescribed by the State Board of Health governing these tourist facilities.

In that way we would have uniform regulations and uniform conditions throughout, and the man with the trailer, whether he is going to

stop where he will need sterile sheets under double blankets, or whether he will come to the seashore or Pinehurst, will know that conditions will be uniformly the same: Grade A milk and Grade A tourist camps, Grade A facilities, will be the same throughout the country.

I think that is a goal we should work for. My experience has been that the counties were rather reluctant to pass rules and regulations, but if they could get a uniform rule and regulation throughout the state, that would probably be most desirable.

In conclusion, I would like to say this: That I believe the field for these trailers is going to come largely as trailers for carrying goods for salesmen, traveling salesmen, or for clothing, shoes, hats, and for display goods where the old-fashioned drummers used to have their innumerable trunks. Now we are going to come to the use of trailers in connection with commercial enterprises of that kind.

Another place for these trailers is going to be in connection with construction work where it is desirable to have offices out on the construction job, and again in laboratories — and incidentally I think there is more and more field for the use of trailers by health workers in connection with laboratory facilities and research work.

Mr. Chairman, I enjoyed that paper very much. I think Mr. Jarrett has covered the field very creditably, and with the exception of mentioning the experiment down in your section of the state I think it is an excellent paper indeed. (Applause.)

President Foster: Thank you, indeed.

Is there further discussion of Mr. Jarrett's paper? If not, we will ask Mr. Jarrett to close.

Mr. Jarrett: Mr. Chairman, I don't believe I have anything to say except that I think we should do something about the problem. I am not particularly interested in what kind of regulations we have. It is not my job to write the regulations. But I do think that the local health departments should become more interested in this phase of tourist travel. I was interested just last week in reading a small editorial in a magazine put out by the Carolina Motor Club, calling attention to this very fact: That the local health departments and the State Board of Health should pay more attention to the roadside eating places and camping places to be used by the tourists coming into the state.

President Foster: Thank you, Mr. Jarrett.

The last paper we have on our program this morning is "Sulfanilamide—Therapeutic and Toxic Effects, by Dr. Jerome S. Harris, of Duke University Medical School.

Dr. Harris. (Applause.)

Dr. Harris then presented his prepared paper. (Applause.)

SULFANILAMIDE — THERAPEUTIC AND TOXIC EFFECTS

By Jerome S. Harris
Department of Pediatrics
Duke University Medical School

Three years have elapsed since the introduction of the derivatives of sulfanilamide into chemotherapy. During that time, particularly in the past year, the literature on the subject has been increasing very rapidly, now at a rate of approximately seventy articles a month. From this mass of information, it is possible to make certain deductions concerning the indications, dosage, and dangers of the drug. Time does not permit a complete discussion of any of these topics. I should like to mention briefly the therapeutic indications and discuss the dosage and toxicity more fully.

Therapeutic Effect [1]

Sulfanilamide has been tried in almost every type of infection. The most favorable reports concern its action on the streptococcus, gonococcus, and meningococcus. A great many of these articles attest to its value in hemolytic streptococcus infections, including meningitis, puerperal sepsis, erysipelas, pneumonia, otitis media, and mastoiditis. In the past two years, approximately fifty recoveries from streptococcus meningitis have been attributed to sulfanilamide — a highly significant fact in view of the general mortality of 92 to 97 per cent, and the record of only sixty-six recoveries in the previous twenty-five years. In puerperal sepsis, the careful work of Colebrook[17] and his co-workers shows a drop in mortality from 22.8 per cent to 5.5 per cent. In erysipelas, especially in infants and young children, there is a striking unanimity of opinion concerning the value of sulfanilamide. The results in throat infections and otitis media and mastoid vary somewhat, but, on the whole, the reports are favorable. In scarlet fever (excluding the complications), osteomyelitis and streptococcus peritonitis, the drug fails to show significant effects. Some of the failures may be due to difference in the nature of the infecting organism. Bliss, Long, and Feinstone[2] have show that hemolytic streptococcus infections of the Lancefield Group A (the usual pathogen for humans) are markedly affected while those of Groups D and F are not.

The results in gonorrhea are very favorable.[6] In a series of 500 cases of acute urethritis, 78 to 90 per cent cures were obtained. Most of the discharges cleared up in less than one week. In fact, it has been suggested that, unless improvement is noted in four days, the patient is not likely to be benefited at all. The complications of gonorrhea respond almost as well as the acute phase. Since the gonococcus thermal death time is shortened by sulfanilamide, a combined course of fever therapy and sulfanilamide may be of value in resistant cases.[5]

In meningococcus meningitis, Schwentker[20] has reported a mortality of 15 per cent under sulfanilamide therapy alone, as compared with 30 per cent mortality with serum in the same epidemic. Similar good results have been reported by others. From a clinical and experimental standpoint, the best mode of therapy would appear to be a combined course of sulfanilamide and serum.

In urinary infections, sulfanilamide has proven to be of value both therapeutically and prophylactically. It is particularly of value in the acute phase since acidification of the urine is not necessary; in fact, an alkaline urine is more desirable. Proteus infections for this reason respond much better to sulfanilamide than to other forms of therapy. Streptococcus fecalis infections are not affected by sulfanilamide. Since the effect depends on the concentration of the drug in the urine, the renal function must be adequate.

Occasional success has attended the use of sulfanilamide in gas gangrene, pneumococcus and staphylococcus infections. The drug is of no value in human virus diseases (such as poliomyelitis), subacute bacterial endocarditis, and uncomplicated tuberculosis. In rheumatic fever, it may be harmful.

Dosage [1]

The effect of sulfanilamide depends upon the concentration in the body fluids. Long and Bliss[3] have shown that 10 mg. per cent in the blood is bacteriostatic for many organisms. Although Osgood[4] has demonstrated the *in vitro* effect of much smaller concentrations, it is generally advisable to maintain a level of approximately 5 mg. per cent for mild infections, of 10 mg. per cent for moderately severe cases and of 10 to 15 mg. per cent for the very severe and otherwise fatal infections.

The concentration of sulfanilamide attained in the blood stream depends upon the dose, the absorption from the gastro-intestinal tract, the amount taken up by the tissues, the renal excretion, and the per cent converted by the body to an inactive form. The absorption is rapid and complete. The maximum blood concentration given by a single dose is attained within four hours. This fact demands that the drug be administered at four-hour intervals, in order to maintain a constant level in the blood. The drug is taken up by most tissues in equal concentrations, and a period of 2-3 days elapses before an equilibrium between absorption and excretion is achieved. Excretion depends upon the state of renal function and the output of fluids, roughly paralleling the urea clearance.

Practically, in normal individuals on a fluid intake of 2,000 cc. daily, it has been found that a daily total dose of six grams will produce an average blood level of 6.2 mg. per cent in twenty-four hours, and that thereafter a level of 5.5 mg. per cent may be maintained by a total daily dose of three grams.[6] In children approximately the same levels are

given by a total daily dose of 0.12 to 0.15 grams per kilogram body weight. However, as would be expected from the theoretical considerations already mentioned, the levels attained in the individual cases vary widely. The same dose gave a level of 2 mg. per cent in one patient, and a level of 23 mg. per cent in a patient with lowered renal function. The level attained may be changed greatly by variations in the fluid intake. Because of these variations, and because the effects depend upon the blood level, and not the dose, it is essential that determinations of the concentration in the blood be made. Fortunately rough tests can be made fairly easily with a minimum of equipment.

The concentration in the urine in cases of urinary infections may be calculated from the dosage, and the fluid output once equilibrium has been established. Thus, after two days, a dose of two grams daily will give a concentration of 200 mgms. per cent total sulfanilamide in the urine, if the fluid output is one liter. This figure must be halved since approximately 50 per cent of the drug is excreted in an inactive form. Levels of from 100 to 200 mgm. per cent free sulfanilamide in the urine are advisable, but it is necessary to check the blood concentration to make sure the latter is not rising too high.

Toxicity

The few studies made have shown surprisingly little pathological effects of high doses of sulfanilamide in animals.[7] Unfortunately these results cannot be directly transcribed to humans. In the past year an increasing number of toxic manifestations in humans have been reported. The milder type is present in practically all ambulatory patients in the form of cerebral disturbances such as lassitude, malaise, dizziness, anorexia, headache, and sometimes excitement, confusion, and disorientation. Clinically most of these are not serious, but they assume importance in the ambulatory patients. A few automobile accidents have already resulted from drivers under the influence of the drug, and one would anticipate an increased number of injuries from industrial hazards. For the protection of the patient, one must inquire as to his occupation, and prohibit work in certain trades while the patient is taking the drug.

Cyanosis is present to some degree in from 50 to 90 per cent of the cases (1 d, 9). Some investigators have suggested that a small amount of black oxidation product of the drug stains the red blood cells.[10] Others have found varying degrees of methemoglobinemia in several to 50 per cent of the patients showing cyanosis.[11,12,13,17] A number of cases of sulfhemoglobinemia have also been reported.[13,14,15,16,17] Clinically the appearance of mild cyanosis without the presence of abnormal hemoglobin pigments is relatively unimportant. However, hemoglobin in the form of methemoglobin or sulfhemoglobin cannot function as an oxygen transporter, and a virtual anæmia may thus exist. This may aggravate the anoxemia of pneumonia or preëxisting anæmia. The

presence and type of these pigments is easily established with a pocket spectroscope. Both sulfhemoglobin and methemoglobin give abnormal dark bands in the red region of the spectrum. Upon the addition of a solution of cyanide, the band due to methemoglobin will disappear while that of sulfhemoglobin will remain. It is important to differentiate between the two pigments since methemoglobin is easily changed back to hemoglobin in the course of twenty-four to forty-eight hours, whereas sulfhemoblobin may persist for as long as six weeks. It is, therefore, necessary to discontinue the drug quickly when much sulfhemoglobin appears, while temporary omission will cause the cyanosis from methemoglobinemia to disappear. The cyanosis or the amount of abnormal hemoglobin pigments does not vary directly with the dose of the drug. There is considerable evidence, however, that the simultaneous ingestion of sulfates and benzine derivatives will aid the formation of sulfhemoglobin.[13,14,15] These should be specifically prohibited, and, until more is known, it would appear advisable to discontinue all other medication during a course of sulfanilamide. The one exception to this rule is sodium bicarbonate. Southworth[18] has shown that a mild acidosis associated with an excessive urinary output of base occurs rather commonly during sulfanilamide therapy. For that reason, it is well to administer 0.3 to 0.6 grams of sodium bicarbonate with every dose of the drug.

Fever occurs in some cases, usually on the sixth to the tenth day of therapy.[19] The presence of fever which cannot be explained by the disease being treated should cause one to stop medication. The fever will subside rapidly if it is due to the drug.

The more severe toxic manifestations are those involving the skin and blood forming organs. Rashes are not uncommon[21,22,23]; Schwentker and Gelman[20] reported an incidence of 6 per cent. They may appear from three to seventeen days (usually from ten to fourteen days after therapy is started, and have been reported after total doses of twelve to eighty-seven gms. Generally the rash is morbilliform or maculo papular, distributed particularly over the buttocks, legs, face, and extensor surfaces of the arms. Itching is common, and wheals, and hemorrhagic lesions may appear. The rash usually disappears two to three days after medication is stopped, but one case went on to severe exfoliative dermatitis,[24] and another was associated with severe toxic hepatitis.[25] Some of the rashes depend upon the development of an allergic state, as shown later by positive scratch and patch tests, and the appearance of a rash or other allergic symptoms after a small test dose.[26,27] Typical drug allergy with asthma, pruritis, and sneezing have been reported.[28,6]

An interesting variant of the skin rash is the light sensitivity phenomenon which has been reported in twenty-one cases.[29,30,31,32] In these the rash appeared after exposure to the sun, and was of the erythematous edema type with urticaria, vesiculation, and intense pruritis. It is interesting that Brugsch,[33] and also Rimington,[34] have demonstrated an

increased porphyrin excretion after sulfanilamide ingestion. This may explain the photosensitization, and also points to a disturbance in the metabolism of hemoglobin.

Sulfanilamide contains a benzine ring with an attached animo group, and would be expected to show toxic manifestations upon the hematopoetic organs. Mild anæmias are not uncommon. Over ten cases of severe hemolytic anæmia have been reported.[35,36,37] After doses ranging from six to 152 grams given over a period of one to fifty days, a severe anæmia of two to three million red cells developed rapidly without premonitory signs in most cases. The extent of the anæmia did not depend upon the amount of the drug given. The condition was associated with high white cell counts, reticulocytosis, fever, jaundice, and sometimes hemoglobinuria. In all cases, the drug was immediately discontinued, and recovery took place after transfusions, alkalinization, and the forcing of fluids.

The only deaths from sulfanilamide have resulted from agranulocytosis. Seven deaths in fifteen cases of granulocytopenia have been reported to date.[37-46] The deaths took place after relatively long courses of the drug, the doses ranging from thirty-five to fifty grams over a period of eighteen to thirty-five days. One case was associated with bacterial endocarditis,[39] and another with recurrent attacks of thombocytopenic purpura.[40]* In our present state of knowledge, one should use the drug very cautiously in any patient who has shown any hematopoetic disturbances. In a third case, the drug had to be stopped twice because of the appearance of severe cramps, nausea, and fever.[41] In a fourth, the drug was continued for three days after the white count had fallen to 3,900.[42] In another a white count had been done of the fourteenth day of therapy, and was found to be normal. On the eighteenth day, the symptoms and signs of agranulocytosis appeared.[43] These cases stress the need for numerous white blood counts, particularly in patients receiving long courses of the drug. Caution must be used after the drug has had to be stopped once for toxic symptoms. In the cases that recovered, a small test dose did not cause a fall in either the red or white cell count. In this regard sulfanilamide differs from other drugs such as amidopyrine. Apparently a long continued course may lead to the production of myelotoxic substances in certain patients. In any event, it is impossible at present to determine which patients will react in this fashion.

Since it is impossible to predict which patients will show idiosyncracies, it is necessary to treat each case individually, and *not* to set up a routine which must be followed by all. Repeated physical examinations must be made in order to detect the presence of cyanosis, rashes, anæmia, or any other abnormal signs. Untoward symptoms should be investigated. In view of the deaths from agranulocytosis, it is necessary to check the white count, or smear at frequent intervals, particularly in those patients

* Case treated with prontosil flavum.

receiving long courses. It is better to err on the conservative side, and to stop medication at the first sign of trouble. If the drug is stopped once for toxic symptoms, great care must be used in beginning therapy again. This was illustrated by the death from agranulocytosis after therapy had to be stopped twice for toxic symptoms. The only case of optic neuritis reported occurred after the drug had caused toxic symptoms twice previously.[47] Lastly, the dose should be regulated so that a sufficient, but not a needlessly excessive blood concentration is maintained.

These restrictions may seem all too imposing. However, we are still using a relatively new drug, and may yet be quite unaware of all the toxic effects. The greatest use of sulfanilamide will be in those conditions (such as gonorrhea) where the great majority of patients will not need high doses, or a course over ten to fourteen days. In these, no deaths have as yet occurred, and later we may be able to relax such close vigilance in these cases.

As public health officials you are probably confronted with the problem of the public sale of these drugs, and the question of self medications. A review of the toxic symptoms, and the care with which a physician should proceed answers these questions very definitely. Popular use of the drug would be enormous. Examine briefly what would happen in the single disease, gonorrhea. At a conservative estimate, ten per cent of the population have gonorrhea. Of these approximately ten per cent would not be cured by the drug in a short time.This one per cent of the population would tend to push the drug to high limits in an effort to effect cures, and there is no doubt that the fatalities would mount rapidly. Furthermore, imagine the situation if the drug were taken for prophylactic measures!

History repeats itself in the chemotherapeutic "bullets." In the early days of arsphenamine there were a great many fatalities before physicians learned to recognize the danger signals. Until we learn these signals in sulfanilamide, we must proceed cautiously. In the meantime we must protect the layman from indiscriminate, harmful self medication.

BIBLIOGRAPHY

[1] Reviews*:
(a) Long, P. H., and Bliss, E. A. Ann. Int. Med. 11; 575, 1937.
(b) Ravina, A. Presse Med. 46; 332, 1938.
(c) Schnitker, M. A. New England J. Med. 218; 503, 1938.
(d) Holman W. L., and Duff, G. L. Am. J. M. Sc. 195; 379, 1938.
(e) Schulte, T. L. Proc. Staff Meet. Mayo Clin. 13; 53, 1938.
(f) Symposium on Sulfanilamide Therapy. J. Pediat. 11; 157, 1937.
[2] Bliss, E. A., Long, P. H., and Feinstone, W. H. South. M. J. 31; 303, 1938.
[3] Long, P. H., and Bliss, E. A. J.A.M.A. 108; 32, 1937.
[4] Osgood, E. E., and Brownlee B. A. J.A.M.A. 110; 349, 1938.
[5] Wengatz, H. F., Boak R., and Carpenter C. J. Bact. 35; 36, 1938.
[6] Alyea, E. P., Daniel, W. E., and Harris, J. S. South. M. J. 31; 303, 1938.
[7] Marshall, E. K., Jr., Cutting, W. C., and Emerson, K. Jr. J.A.M.A. 110; 252, 1938.
[8] Schwentker, F. F. J.A.M.A. 109; 1527, 1937.
[9] Long, P. H., and Bliss, E. A. South. M. J. 30; 479, 1937.
[10] Marshall, E. K., Jr., and Walzl, E. M. Bull. Johns Hopkins Hosp. 61; 140, 1937.
[11] Bensley E. H., and Ross, J. B. Canad. M.A.J. 37; 62, 1937.
[12] Kenney, M., Johnston, F. D., von Habler, T., and Miles, A. A. Lancet 2; 119, 1937.
[13] Paton, J. P. J., and Eaton, J. C. Lancet 1; 1159 and 1369, 1937 .
[14] Archer, H. E., and Discombe, G. Lancet 2; 432, 1937.
[15] Discombe, G. Lancet 1; 626, 1937.

[16] Frost, L. D. B. Lancet 1; 150, 1937.
[17] Colebrook, L., and Purdie, A. W. Lancet 2; 1237 and 1291, 1937.
[18] Southworth, H. Proc. Soc. Exper. Biol. & Med. 36; 58, 1937.
[19] Hageman, P. O., and Blake, F. G. J.A.M.A. 109; 642, 1937.
[20] Schwentker, F. F., and Gelman, S. Bull. Johns Hopkins Hosp. 61; 136, 1937.
[21] Finney, J. O. J.A.M.A. 109; 1982, 1937.
[22] Massell, B. F. New England J. Med. 216; 487. 1937.
[23] Mainger F. S. Pennsylvania M. J. 41; 386, 1938.
[24] Meyers, G. B., Heide, E. C. V., and Balcerski, M. J.A.M.A. 109; 1983, 1937.
[25] Saphirstein, H. Urol. and Cutan. Rev. 42; 101, 1938.
[26] Schonberg, I. L. J.A.M.A. 109; 1035, 1937.
[27] Goodman, M. H., and Levy, C. S. J.A.M.A. 109; 1009, 1937.
[28] Salvin, M. J.A.M.A. 109; 1038, 1937.
[29] Newman, B. A., and Sharlit, H. J.A.M.A. 109; 1036, 1937.
[30] Grosjean, W. A. J.A.M.A. 109; 1382, 1937.
[31] Menville, J G., and Archinard, J. J. J.A.M.A. 109; 1008, 1937.
[32] Frank, L. J. J.A.M.A. 109; 1011, 1937.
[33] Brugsch, J. T., in Brunsting, L. A. Prof. Staff Meet. Mayo Clin. 12; 614, 1937.
[34] Rimington, C. J. Soc. Chem. Ind. 57; 87, 1938.
[35] Jennings, G. H., and Southwell-Sander G. Lancet 2; 898, 1937.
[36] Kohn, S. E. J.A.M.A. 109; 1005, 1937.
[37] Harvey, A. M., and Janeway, C. A. J.A.M.A. 109; 12, 1937.
[38] Touraine, Durel and Baudoin. Presse Med. 46; 83, 1938.
[39] Plumer, H. F. New England J. Med. 216; 711, 1937.
[40] Borst, J. G. G. Lancet 1; 1519, 1937.
[41] Berg, S., and Holtzman, M. J.A.M.A. 110; 370, 1938.
[42] Schwartz, W. F., Gravin, C. F., and Koletsky, S. J.A.M.A. 110; 368, 1938.
[43] Young, C. J. Brit. M. J. 2; 105, 1937.
[44] Model, A. Frit. M. J. 2; 295, 1937.
[45] Trumper, A. New England J. Med. 216; 857, 1937.
[46] Bilger, J. A., Clifton, W. M., and Werner M. J.A.M.A. 110; 343, 1938.
[47] Bucy, P. J.A.M.A. 109; 1007, 1937.
* Most of the literature consulted on therapy and dosage will be found in the general reviews.

President Foster: We will ask Dr. W. P. Richardson to open the discussion.

Dr. W. P. Richardson (Chapel Hill): I think Dr. Harris has given us a most helpful discussion on a subject which has doubtless been rather confusing to all of us. There has been such a multitude of articles and reports on the use of sulfanilamide that we have found it rather confusing as to what to expect, and a great many of us have been afraid to use it in legitimate cases perhaps because of the reports of toxic symptoms. I think that his discussion has served to clarify a good many of these points for us.

In regard to its uses, we must realize, as he pointed out, that it is a new drug. New indications, new uses may be discovered as we go along. Its exact uses and exact limitations will take more time, and more extensive use to define. We must observe, of course, a state of mind, avoid overenthusiasm on the one hand and overskepticism on the other.

In regard to the toxic symptoms, I think two things were brought out by his discussion: First, that these require that very careful control be exercised over the administration of the drug, and, second, that we need not fear unduly the dangers of the drug if it is properly administered in properly selected cases.

As public health workers we are of course interested in its use in gonorrhea, perhaps more than in almost any other field. We are interested in the possibility of using it in our venereal disease clinics. I think that we should be very careful that we do not institute its use in our clinics until we can surround its administration with proper safeguards, until

we can explain to the patient what may be expected, and give him proper instructions, until we are equipped to make appropriate tests, and studies both at the time of inauguration of the treatment, and at frequent intervals after its inauguration, to detect danger symptoms, and stop its administration before these most serious results come about.

I was very glad Dr. Harris mentioned the necessity of legal control of the sale of the drug. Because of its applicability to venereal diseases we have a law in this state which should limit its sale except on prescription by a physician. As we all know, this law is not enforced in any way as it should be, perhaps because there is no very effective method of enforcement provided. But we are, as public officials and health workers, vitally interested in this phase of it, and I think we should work toward the end that really effective regulations may be put in force to prevent its unauthorized, indiscriminate, and its ill-advised use by the lay public.

Undoubtedly a good deal of that is occurring, and the fact that we haven't had more difficulty is perhaps best witness to the point that was made, that while we do have a great many reactions, only a few of these are too serious if the administration of the drug is stopped in time. However, we can readily see what great danger there is, when people without any instructions buy the drug over the counter, and take it on their prescription. It does devolve upon us, I think, to see that such regulations are carried out and enforced that will prevent this.

I enjoyed Dr. Harris' paper very much. (Applause.)

President Foster: Is there any further discussion?

Dr. Phillips (State Board of Health): Mr. President, I should say something about how sulfanilamide is used in gonorrhea, but I had a rather interesting experience this morning before I came down here. I was up a good deal earlier than I generally get up, and the telephone rang. One of the leading dairymen in the section asked me if I knew anything about sulfanilamide, and I said I knew a little bit.

"Well," he said, "how much can you give a cow?" (Laughter.)

I told him I didn't know, but I knew that they had given 140 grains to humans without any ill results, so I should think he could give at least four or five hundred grains to a cow.

He told me that several months ago he had been reading about this drug, and how it reacted against streptococcus, and that he had a few cows that had streptococcus mastitis, and had used the drug with quite a bit of success on these mastitis cases. He said that this morning he found out that one of his most highly prized dairy cows had a very badly lacerated udder, and he wanted to be sure she didn't develop a mastitis and die, and he was going to give her as much sulfanilamide as he could give her so she wouldn't get mastitis.

I thought possibly that might be a use for the drug as we begin to know more about it, that is, controlling some of these milk-borne streptococcic epidemics that are probably due to streptococcic mastitis. (Applause.)

President Foster: Thank you, Dr. Phillips. That is a very interesting thing. I have had that same thing come up in my county. I am glad you brought it up.

Dr. McPheeters: I would like to ask if the drug is excreted with the milk?

President Foster: We will have to ask Dr. Harris that.

Dr. Harris: Yes, it is excreted in milk.

President Foster: Is there more discussion? This is a very important subject, and this is a drug that is used indiscriminately by practically everybody, veterinarians, medical doctors, and whatnot, and we would like to have more discussion.

If there is no more discussion we will ask Dr. Harris to close.

Dr. Harris: In regard to that question, sulfanilamide is present in all body fluids, and in all tissues, practically evenly distributed, with the exception of bone.

I was much interested in the remarks on treatment in animals. Several diseases, apparently, in animals are affected by the derivatives of sulfanilamide. The one that has attracted most attention recently is canine distemper.

The other interesting remark made was on the danger of sulfanilamide medication. In other words, it has previously been shown in other drugs that people will tend to treat themselves first, and animals second. (Applause.)

President Foster: Before we adjourn for the noon recess, I would like to announce a few committees: The Committee on Resolutions, Dr. Mosely, Chairman; Dr. Norton, Dr. Bulla.

The Nominating Committee for nomination of officers for the coming year — president, vice president, secretary, and treasurer. This committee will be composed of Dr. R. L. Carlton, Chairman; Dr. Buie, and Dr. McGehee.

We have another committee that we were asked to appoint this morning to consider legislation for the control of rabies in North Carolina.

We would like to appoint a committee to make recommendations to the proper authorities or legislators concerning the legislation of a better law for the control of rabies. On this committee we will have Dr. Hudson as Chairman; Dr. Parks, and Dr. Hamilton.

I would like to make a correction in our program. It says to return here at 12:30 after the noon recess. That should be 2:30.

Announcement concerning the dinner meeting.

President Foster: We will reconvene at 2:30 o'clock.

Whereupon the session adjourned at 1:00 o'clock.

The session convened at 2:45 o'clock, President Foster presiding.

President Foster: We are going to change the program slightly this afternoon. Our first speaker requires a lantern to show some slides, and we fail to have one at the present time, but we have two on the way here which will arrive shortly. So we are going to ask Dr. W. R. Parker to read his paper at this time. "The Coöperation of Local Physicians with Maternity and Infancy Centers Through Health Departments."

Dr. Parker then presented his prepared paper. (Applause.)

COOPERATION OF LOCAL PHYSICIANS WITH MATERNITY AND INFANCY CENTERS THROUGH HEALTH DEPARTMENTS

W. R. Parker, M.D.
Jackson, N. C.

With much reluctance, I will attempt to discuss with you this vital phase of Health work, realizing in the beginning that the greater majority of you have been in the health work for years while I am only a beginner in my first year. Yet, on the other hand, I have been a practicing physician in a rural county of this state for over twenty years and, from the standpoint of experience and observation, I think I understand the local physician's viewpoint.

For several years now many of the older physicians have been inclined to feel and think that the Health Departments are, in a general way, trying to enter the field of regular practice to be later taken over by State Medicine. I said in the beginning that this sentiment was in the minds of a few of our practicing physicians, and again I tell you that in some of the rural sections this very thing will be looked on with favor and State Medicine would be welcomed, yet the greater majority, I think, still feel that the practice of medicine should not be invaded by State and Federal Aid.

First of all for my Health Department to function properly and smoothly it must have the whole hearted support of the County Medical Society, and to do this the Health Officer must, in a quiet way, be the most active member of the Society. He must see to it that the Society meets regularly and promptly, and on every occasion let his brother physicians know about the activities of his department.

It was my pleasure and privilege to contact every practicing physician in the county and thank them for the splendid coöperation and kind hearted support of the Health Department and its various activities, and to let them know that I realize the problems and difficulties of the local physicians and that it was my desire to work with and for them in every instance possible, but told them that if any small act or deed

was done that they, the physicians, should feel detrimental to their welfare that they should not cherish any ill feeling, but should come to us and we would make amends or explain our position and right ourselves and our department. It should further be planted in the minds of the local physicians that it is the wishes and desire of the State Health Department that a spirit of coöperation should and must exist for the best interest of all concerned.

As I said before, a few of the physicians are quite skeptical of the workings of the Health Department for they do feel that we are entering the field of practicing medicine and we must show them that we are not here to practice medicine in competition with them, but our desire is to practice medicine, in as small a degree as possible, in coöperation with them, for we are primarily interested in practicing and teaching Health education and then preventative medicine.

Our ideal will probably never be reached, but right now our wishes are to prevent as many of the communicable diseases as possible, dealing in the correction, rather pointing the way to the correction of as many deformities as possible; neglected eyes, faulty nutrition, congenital abnormalities, etc., thus leaving the entire field of practicing medicine to our brothers, our coöperators, and not our competitors.

It must be plainly shown to the local physicians that it is not the wishes nor desire of the Health Department to see or treat any of their patients in the Maternity and Infancy clinics, but rather for them to assist us in instructing the midwives and see the patients of the midwives, first of all, for the patient's sake, for we all know that the only reason that they patronize the midwife is for an economic reason, therefore make it plain to these physicians that from a humanitarian standpoint it is their duty to help these poor unfortunates and also at the same time they will be helping themselves in that they will be forewarned of the patient's condition should they later be called by a midwife to one of these patients in a difficult labor. In my own county I believe that the local physicians realize that they are doing a great service to their people, for we do stress the point that the midwife come to these clinics with her patients and the infants where they can see their own family physician and talk and advise with him should his services be absolutely needed, for the members of the Health Department have emphasized to the local physicians the fact that we are simply going to look these patients over thoroughly, find out their abnormalities and deficiencies, check their physical and mental ills and right then and there advise these patients that she has thus and so and needs treatment and advise her to see her family physician at once. In the meantime, we make it a point to see that family physician and tell him that we saw in our Maternity and Infancy clinic one of his patients and we found that she had a four plus Wassermann, or that one of the babies needed a circumcision. In other words, impressing it plainly upon

the family physician that we are detectives so to speak, and that we are hunting up patients for him and for the mutual welfare of the patient and the doctor we are anxious for her to be treated.

Let the physicians know that in the case of syphilitics or other prolonged treatments that they feel that they cannot continue to treat, for financial reasons or otherwise, the Health Department will be glad to assist them or continue whatever treatment they need if they will advise us.

In our department we try to impress upon the local physicians that we treat only three classes of patients and they are:

1. Those referred by the County Commissioners.
2. Those referred by the Welfare Department.
3. Those referred by any practicing physician in the county.

Whenever any member of our Department visits any given community we contact, first of all, the local physician and see if our department can be of any service to them or their patients, or should they have a timid prospective mother, an invalid or any other type of patient, that they would like for either of us or the nurses to visit and instruct them along the lines of care or treatment. Our desire is to serve the people efficiently and satisfactorily and we all realize that if we have the coöperation and assistance of the local physicians that a good beginning is already made. We also instruct the physicians to tell his patients that should they need any advice along the lines of sanitation, sewage disposal, dairy problems, mosquito control, wells or privy building to call on us for it is our privilege and our duty to help them and our Sanitary Officer is ready and willing to assist them at any time in promoting better living conditions for the people.

Last, but not least, we must accept the responsibility of instructing and training the midwives to a greater or lesser degree, for rightfully she is your assistant, almost a servant. We all realize that from an economic standpoint, if for no other reason, the midwife is and always will be essential, so it is readily seen that the monthly contact of the expectant mother, her midwife and the clinic physician will mean the dissemination of much information that will be beneficial to all and if some condition arises at the time of the delivery whereby the services of a physician are essential, the knowledge obtained by him in his personal contact with the patient in our Maternity and Infancy Center will be of much value to him as regards the safety of the mother and forewarning of any dangerous possibility.

Coöperation is the keynote for all activities in the workings of the Health Department, but along with coöperation we must link confidence in order that we might be of the greatest value to our brothers of the Medical Fraternity and to the people of the county and the State.

To you, I will say I am glad that I am here and I am glad to be a

member of this great organization and I wish for each of you greater work, a greater service and at last a richer reward.

I thank you.

President Foster: May I ask that the discussion be opened by Dr. N. Thomas Ennett of Greenville? Is Dr. Ennett present? (Not present.) Dr. Ennett does not seem to be present, so will someone volunteer to take his place?

This particular phase of the work of maternity and infancy centers is relatively new in North Carolina. I understand it is very much thought of by everybody who is familiar with it. We all know that the maternity and infancy death rate is entirely too high in our state, and I think that we should have lots of discussion along this line.

We would like to have anyone who will enter into the discussion.

Dr. G. M. Cooper (Raleigh): Mr. President, Dr. Parker has done too much good work down there for the paper to go by this way. I am sorry Dr. Ennett happens to be out. He took hold as health officer down there the first of July, and he made the wisest move a health officer can make in starting a maternity and infancy program, in that he took the medical profession into his confidence at a medical society meeting. Not only that, he followed it up with close personal interviews, and they have a program there in which the doctors are sympathetically, honestly, and sincerely interested — and they are carrying through, with increasing numbers reported. His county has about 65 per cent of Negroes in the population, with more than half the deliveries in the county done by midwives each year.

He is carrying on a program that I think should receive the commendation of the profession, and of health officers everywhere.

I have taken genuine pleasure in coöperating with Dr. Parker, as I have with all the other health officers. He has come into the field, and I think has covered the ground thoroughly in that he has extended the enterprise to practically every section of the county. (Applause.)

President Foster: Is there any further discussion of Dr. Parker's paper?

Dr. Carl V. Reynolds (Raleigh): I made up my mind to keep my chair warm, and not have anything to say, but I can't forego the opportunity of expressing my deep appreciation for what Dr. Cooper has done in establishing 130 prenatal and child health centers in the State of North Carolina.

I don't believe that the medical profession as a whole, or the health workers as a whole, as a group, realize and appreciate the vast importance of this procedure. In the 130 clinics now established in North Carolina, we have examined in the last eighteen months 11,500 potential mothers. Out of that group nearly 13 per cent of those mothers were

syphilitic. You know as well as I do that out of every ten babies born of syphilitic mothers nine will be syphilitic.

You know as well as I do that if those mothers are treated within the first four months of their pregnancies on through their terms that nine of those babies will be born free from syphilis. That is what you should have in mind, and realize the importance, if from no other angle than that it is of paramount importance that we go forward with it and have three times that many clinics this time next year.

I do congratulate Dr. Cooper. I think he has done a wonderful work. I also want to express our appreciation, deep and sincere appreciation, of those men in the field who have carried on these clinics so successfully. (Applause.)

Dr. Ernest A. Branch (Director Division of Oral Hygiene): I would like to say this to you, Gentlemen, you health officers particularly, and the nurses who contact the women in these prenatal clinics: We know, of course, that if we are going to reduce the maternal death rate we must have a healthy, robust woman to give birth to her child. We can't do that as long as these old women, and young ones too, eat with some of the mouths we see.

The Executive Committee of the State Dental Association, not the Board of Health — don't get curative medicine and preventive medicine mixed up; we walk down the same road hand in hand, but they run their business and we tend to ours — have proposed to the dental profession that they extract the teeth of these women who are indigent, when properly referred, the Welfare Department to pay for it out of money that is available for medical care of indigents.

I just want to pass that on to you, folks, that when you go back home there is an opportunity to help these old souls without spending a dime out of your pocket or mine. That is good news. (Applause.)

President Foster: Is there any further discussion of Dr. Parker's paper?

Dr. Ennett, I see you are down here to discuss the paper of Dr. W. R. Parker. We had to change the program around. I am mighty glad you came in.

Dr. N. Thomas Ennett (Greenville): I just came in.

I didn't hear Dr. Parker read his paper, but I read it previously, and presume that he followed it according to the way it was written. I am none the worse off, probably, for not having heard it.

In general it seems to me the matter of getting coöperation with the medical profession in maternal and infant welfare work is a matter, first, of going to the medical society, the local society, laying the plan before them, and getting their approval. If you don't get their approval it would be better not to undertake the work.

In our own case we laid the matter before what we call a welfare committee, that is, a committee known as the Public Welfare Committee, appointed by the medical society. This committee approved the matter of our having maternal and infant welfare clinics. Then the society itself appointed another committee whose business it was to organize these clinics. Through the State Board of Health we were able to get the money by which these clinicians could be paid for doing the work in the clinics.

This committee from the medical society circularized all of the members of the society, asking if they would like to participate in the work of these clinics. It was arranged that those who cared to participate might participate.

The only other thing that seems to me of great moment, of course, in addition to the Health Department trying to see that the patients who need this service, and are entitled to it, get to the clinic is to see that there is some uniformity on the part of the clinician in doing the work, with the hope, of course, and the understanding that this clinician in performing his duties will conform to the state regulations.

In our own experience we have had no difficulty at all in getting the coöperation of the entire medical profession in our county. For that reason I am not able to discuss with you any of the difficulties that might, should, would, or have happened.

We say to the midwives that we want their coöperation, that we are trying to train the people to get away from midwifery, that we are in hopes that these midwives who have been employed as obstetricians, or take the part of obstetricians, will eventually be employed as nurses for these patients, and that our goal is to see that every mother has a physician in attendance at the time of delivery.

As I recall Dr. Parker's paper, those are the only comments that I care to make. (Applause.)

Dr. Sherriff (South Carolina): It seems to me in combating this maternity and infant mortality rate, particularly in the South, that we must educate our people other than the ones who come into our clinics. It isn't just the indigent cases who need this, but also women who have private physicians. They haven't realized the importance of pregnancy, and what it carries with it.

It seems to me most important that these women should be educated to have examinations before pregnancy to see that they are fit to become mothers, physically, and then to have prenatal examinations to see that they are all right during pregnancy.

In South Carolina we have a maternal committee made up from the Medical Society of the State of South Carolina, and we investigate the maternal death rate. In an investigation in my county we found that many of these maternal deaths were not indigent cases, but were private cases, cases of private physicians. These women must be taught to

present themselves to the doctor for examination. We can't expect the doctor to go around and gather up the cases, to know all of his cases who are pregnant. The private cases should be educated by every means we can use to get to them, through the press, through book clubs or any sort of women's clubs which will teach these women to present themselves to the physicians early in pregnancy for examination and treatment.

Some of these deaths are certainly preventable. Perhaps there are not so many syphilitic deaths in this class, but there are toxemias of pregnancy and other things. We can't prevent them one hundred per cent, but we can go a long way towards preventing them. I think this is one of the most important steps, educating these women to go to the doctor early in pregnancy, teaching them what to expect in antepartum care.

Sometimes I think it is the women who are going to have to demand certain things of the physician, certain care. Many of the physicians in my county perhaps don't give adequate care, or what we consider adequate care, to the prenatal case after she enters their offices. She is perhaps looked at and her blood pressure is sometimes taken and sometimes not. It is taken for granted because the physician has known her since childhood that she has a negative Wassermann, and her blood is not tested.

Some of these women bear children who have positive Wassermanns.

I think the woman is going to have to demand that of her private physician. (Applause.)

President Foster: Thank you, Dr. Sheriff.

Is there any further discussion?

Dr. A. D. Gregg (Henderson): I just want to ask a question as to whether any of the men in the rural sections have difficulty in getting these patients to the clinic, as I do. It is a matter of transportation. We have coöperation with the medical profession in my county, and the mothers are apparently anxious to come, but being five, six, eight, or ten miles out from the health center, it is a question of getting them there.

I would like to know if any of the men have worked out a means of overcoming that?

As to educating these people, I feel that if our nurses put sufficient information and pamphlets in nearly every home in Vance County, where there is a woman of child-bearing age it will be a big help.

President Foster: Is there any further discussion?

Dr. Ennett: Regarding getting patients to the clinic, we have adopted the plan of getting a voluntary motor corps for that purpose, and it works out very nicely. We haven't been doing it very long, but it gets mothers out who otherwise wouldn't be able to come. We get them through the various women's clubs and social clubs. We get the women to volunteer to give their time and their automobiles for this purpose.

President Foster: Is there any further discussion?

If not, we will ask Dr. Parker to close.

Dr. Parker: I don't know that I have anything further to say, but, as Dr. Gregg said, in any rural county transportation is the greatest obstacle, I think, and the best way to overcome that is to have a transportation committee formed in your P.-T.A. or women's club, then let the chairman of this committee see to it that they go around and bring these patients out to the various centers.

As Dr. Gregg said, if you have three, four, or five centers in a county, a very large county, then lots of your patients have to go nine or ten miles to their particular center.

I found the same difficulty in the V.D. clinic. I know I have a patient there who comes to the V.D. clinic who pays two dollars for his transportation. So it is a vital question in the rural county, the question of transportation.

President Foster: Our next paper on the program is "The Report of the Venereal Disease Program in Forsyth County Conducted by the City and Health Departments, the Urological Group of the Local Medical Profession, and Other Part-time Clinicians," by Dr. J. Roye Hege of Winston-Salem. (Applause.)

Dr. Hege then presented his prepared paper. (Applause.)

THE REPORT OF THE VENEREAL DISEASE PROGRAM IN FORSYTH COUNTY CONDUCTED BY THE CITY AND COUNTY HEALTH DEPARTMENTS, THE UROLOGICIAL GROUP OF THE LOCAL MEDICAL PROFESSION AND OTHER PART-TIME CLINICIANS.

J. Roy Hege, M.D.
Winston-Salem, N. C.

Syphilis is known to be a highly infectious and widely prevalent disease. The United States Public Health Service made a survey of North Carolina a few years ago and found syphilis prevalent in about 10 per cent of the white population and 30 per cent of the colored population. To those that would question these figures, I would like to call to their attention that between the years 1920 and 1927 in an area covering at least two-thirds of the United States it was found from the reportable disease records that there were 390,000 more cases of syphilis than of diphtheria, 1,017,500 more cases of syphilis than of smallpox, 1,122,500 more cases of syphilis than of typhoid fever, and 78,500 more cases of syphilis than of tuberculosis. Realizing that every case of syphilis could be rendered non-infectious if diagnosed early and treated properly, a program for its control in any community is justified in the light of our present knowledge of its communicability.

Our Public Health Objectives Are: First, to render every case of syphilis permanently non-infectious. Second, to lower the incidence of

syphilis. To render an individual who has syphilis permanently non-infectious, it is first necessary to find him, and second, to treat him adequately. By what methods do we find one to be syphilitic? By a physical examination by a physician, and a laboratory examination of the individual's blood (the so-called Wassermann test for syphilis). Therefore, the routine examination of an individual by a physician constitutes the procedure of finding syphilis.These examinations are made by all conscientious physicians for insurance companies, for certain industries prior to employment, for all women known to be pregnant, for food handlers, for domestic servants, for nursemaids, for all members of the family where there is a known case of syphilis, and all other contacts of a syphilitic.

When we have found the syphilitic we should treat him. Every person known to have syphilis should be entitled to adequate and early treatment. In early syphilis any treatment which fails to include at least thirty injections of an arsphenamine product is generally accepted as inadequate treatment. The treatment of late syphilis cannot be defined as adequate by any specific number of injections but remains to the judgment of the physician. In order to promote further our objectives, it is necessary to keep people informed of the program that is being carried on in our local community as well as furnishing them with such information about syphilis of a general nature as we read in the newspapers and popular periodicals that have wide circulation and information that we hear over the radio at intervals.

Clinics for the control of syphilis have been conducted in our community for a great many years. The first clinic was organized in the City Health Department, and continued to operate there for several years, then it was transferred to the City Hospital, and became a part of the out-patient clinic service. Every hospital's out-patient clinic service should be equipped to treat syphilis and gonorrhea or the hospital should be closely affiliated with a Venereal Disease Clinic. However, hospital out-patient clinic service never has nor never will meet the needs of a community in the control of syphilis. A Venereal Disease Clinic to control syphilis and gonorrhea must be organized to fill a community's needs rather than a patient's needs. The director must have the viewpoint of treating syphilis *per se* in a community, and the program must be organized and extended so as to accomplish this goal. Our out-patient clinics are only asked to serve our sick people. They have no idea of follow-up work, returning lapsed cases, hunting out sources of infections, etc. In 1925 a clinic was started for the treatment of syphilis in the County Health Department. This County Health Department clinic outgrew the quarters furnished it, and through the coöperation of the United States Public Health Service and the city of Winston-Salem, it was moved to the school building at the corner of Seventh Street and Highland Avenue, and is now our present City-county Clinic. We are treating

an average of more than 1,400 cases a week at a cost of less than twenty-five cents per treatment per patient. The clinic operates as follows: Patients are referred to the clinic by the physicians of the city, the Health Department, and the Industrial Medical departments. Blood specimens are taken from each person, and if found to be positive, which is evidence that the patient likely has syphilis, an economic status is established on the patient. If the individual is entitled to free treatment he is then examined by a physician especially trained in the diagnosis and treatment of syphilis. A course of treatment is outlined by this physician who is a specialist. The patient is then referred to the clinic physician who gives him the treatment. In event of any complication during the course of treatment due to the teatment or otherwise the case is referred back to the specialist for further study and advice. The case continues treatment until discharged by the physician in charge. Should he lapse treatment, an investigation is made as to the cause for the lapse, and he is advised to return to complete his treatment. The causes of lapse of treatment are varied. The individual may move out of town; he may find the clinic hours conflicting with his daily employment; sickness may have overtaken him; he may deliberately lapse his treatment. In event the lapse is deliberate and persistent the law may aid us in compelling him to continue his treatment for the protection of the general public against his infectiousness. The majority of the cases do not lapse, but continue throughout the prescribed course of treatment. In carrying on our present program it is necessary for us to have the services of three nurses, two clerks and two physicians in attendance during the hours the clinic is open which are from 1:00 to 5:00 o'clock each week-day except Saturday. Wednesday is set apart for white patients. We have recently acquired a laboratory technician, Fries Shaffner. He was trained in Dr. Kahn's laboratory at Ann Arbor, Michigan, to do the Kahn Test for syphilis. In the laboratory he examines the blood of individuals to determine the positive or negative evidence of syphilis. He also examines the cerebro spinal fluid to determine the existence of the disease in the spinal or brain tissues. In cases where this is found to exist a special treatment is necessary to treat the case to prevent a disabling disability of syphilis of the nervous system. Mr. Shaffner also does darkfield examinations of the initial lesion of the disease. In cases where this is positive the treatment can be shortened considerably, and the patient is much surer to be permanently cured. By a blood test it is possible to discover a large number of latent infectious persons who would otherwise be missed because of masked symptoms, or few symptoms, or manifestations of syphilis.

The period of infectiousness of syphilis is variable. This period may last for weeks or months, and may even return after a period of non-infectiousness. Six per cent of all cases relapse, and 91 per cent of all relapses occur in the first two years after the onset. Therefore, the first

two years of the disease is the most dangerous from the public health viewpoint. This is not necessarily the most dangerous period for the patient; he may go along harboring the disease for many years before it breaks down his health, and when it goes on over a period of years frequently he cannot be cured. The disease is only arrested.

Studies made through the county show that in the past, that of those who seek treatment, 60 per cent lapse before they receive ten doses of treatment. This short course of treatment is very inadequate, and is little short of worse than no treatment, because it is a recognized fact that a short course of treatment has a tendency to make the syphilis spirochetes, or germs, resistant to the drug's effectiveness. There is a law forbidding any druggist or other person to sell or advise any treatment for syphilis or gonorrhea, except upon the written prescription of a physician.

There is a state law requiring all domestic servants to have a health certificate issued by a physician, and it must state that he or she is free from any infectious or communicable disease, and the certificate should have with it a statement from a reputable laboratory showing the blood test to be negative to syphilis. Those people employing domestic servants should insist on the servant having such a certificate from a physician. Since a great many of our leading industries require the laborers to be free from syphilis there is a greater possibility that the servant may be a rejected laborer, and will be a syphilitic.

Some of the Problems We Must Meet in Our Community

First, syphilis is much more prevalent among the colored population than the white, perhaps three times as prevalent. Besides this fact as it stands, there is the social customs of the colored race. They are a gregarious people, that makes the incidence rate per year much higher in the colored population. This rate in the general population is four per thousand persons. If we apply this conservative rate of four per thousand to our county and city which has a population of 135,000, this would give us 540 new cases of syphilis annually. So it is easy to reason the necessity of an extensive program for the control of syphilis. Since we have an annual increase of 540 it is only the number that we treat over and above this number that reduces our prevalence. If we are treating 1,400 cases a week we are only reducing the prevalence by 840. Therefore, we should like to treat 2,000, 3,000, or more per year. Another problem that we recognize is the inaccessibility of the clinic to the colored population. A Scatter Map shows that more than 50 per cent of those attending the clinic at present come from within ten blocks or so of the clinic. This leads us to plan for treatment stations located in congested areas of colored population, and we have in mind a treatment station in the southeast side of the city, and one in the north of the west section of the city.

President Foster: We will ask Dr. J. C. Knox of the State Board of Health to open the discussion on this paper.

Dr. J. C. Knox (Raleigh): I think that Dr. Hege has presented very well the many problems that most of us find in dealing with the problem of syphilis. While he may have a much larger treatment program than you might have in smaller counties, the problem is much the same.

In dealing with the situation we are interested not merely in the treatment of syphilis, because, as Dr. Hege has shown by his figures, we can't keep up with the increase unless we go at it rather heavily.

The early diagnosis of syphilis is very important, and while Dr. Hege has a means for performing darkfield tests at his clinic, some of you others do not have it, but you still may have that service through the State Laboratory of Hygiene. They have for distribution a container for sending specimens in to the laboratory that may be examined for spirochete, commonly known as the delayed darkfield test. That is not very generally used. We hope that you will use it more frequently in the future.

The next thing we are interested in is, of course, the provision for an adequate treatment of the cases that we know about, and we are now in a better position to aid you in providing those facilities than we have been in the past. That service is essential.

When we speak of adequate treatment it means quite a bit. It means that we must give the drug in a definite schedule, certainly in the early cases, and we must alternate it, that is, the arsphenamine with the heavy metals, and we must keep them under treatment for a sufficient length of time. We are advocating continuous treatment over a period of sixty-five weeks for the early case, and it may be that we will have to weed out some of our older cases of syphilis because of the load of the earlier cases, and of course because of the fact that in the early cases we can accomplish much more in the way of cures.

To do that you must have adequate follow-up work and case-holding. If your patient lapses treatment he must be visited to find out why he lapsed, and investigated, and be brought back for treatment. He may have moved out of your jurisdiction. If he has an effort should be made to find out the address to which he has gone, and where he is living at the present time, so that you can notify the health officers, whether in the state or out of the state, of that patient's existence, and also give a complete record of his treatment to date. That, of course, followed through for the early cases would help considerably in the control of syphilis.

Dr. Hege has mentioned how we may help in finding new cases. Heretofore the treatment in this state has been running along about even, due to the fact that those who become delinquent are replaced by those who want treatment, and will come voluntarily. In some of our clinics we have an average treatment of twelve doses per patient per year. Some of them run up as high as twenty doses per patient per year. That is

not sufficient. We are not keeping up with our problem. We can't possibly do it.

I have in mind one record that the health officer asked me to look at, in which the patient had received sixty-five treatments, but still had a positive Wassermann, 4-plus. In looking at that record, though, I noticed that he had received that treatment over a period of four years, with intervals of six months in which time he was receiving no treatment. He had at one time had a negative Wassermann test, but he had gone back to a positive reaction. If we were treating the patient according to the Wassermann test, and started with a 4-plus Wassermann, we hadn't gained anything at all during the whole course of the treatment. If that patient had received those sixty-five treatments within a period of a year and a half, he probably would have been cured.

I was in hopes that Dr. Hamilton would be here to explain to you what is on your mind, the difference in the reports of the Wassermann test and the preciptin test that are going back to you. A good many of you want to know what you should do when you find a precipitate test of 4-plus with a negative Wassermann — how you should treat that patient.

In the evaluation of the laboratory services by the United States Public Health Service, it was found that the precipitate test and the Wassermann test were in agreement in 100 per cent of cases in secondary syphilis. The disagreements came in the early stage, that is, between the primage stage and the time that the blood became positive, and of course in the latent case, or the case that had been under treatment. If a repeat test is made in the early case before the secondary symptoms have appeared, that Wassermann test will become positive with the precipitin test. So a repeat test will clear that up.

If the case is one that has had treatment or is a latent case, the precipitin test is much more sensitive than the Wassermann test that we are using in this state, and it would indicate that the patient was in need of further treatment. It might be that he had had some treament, or that he had had none at all. Anyway, that patient would need treatment.

That is a thing that you should follow in handling cases where there is a disagreement in the precipitin and Wassermann tests.

The laboratory test, by the way, is only an additional means of finding syphilis and helping you. It is what we might term a diagnostic aid. If you will remember that, not to rely entirely upon the test, we think that you will be on safe ground.

There are false positives in both cases. In North Carolina we have malaria, particularly in the eastern part of the state, and it is quite possible that a positive test may be encountered when a patient has active malaria, either with the precipitin test or the Wassermann test. But in the absence of any acute illness or a few of the chronic diseases like

tuberculosis, perhaps, or diabetes, when you have a positive precipitin test and a negative Wassermann test, that patient needs treatment. (Applause.)

Secretary Elliott: Is there any further discussion of Dr. Hege's paper?

If any of you have anything to suggest for the fellows in the smaller counties, we would like to have you suggest it.

Dr. Hege, if there isn't anything further, will you close the discussion?

Dr. Hege: I think I have nothing more to say except to say that I am glad that we are looking forward to expanding our present clinic services, the present venereal disease program throughout the larger centers in the state. We are hoping to have a much more complete program in the course of the next year or so.

Secretary Elliott: The next paper on the program is entitled, "The Serum Treatment of Pneumonia," and will be given by Dr. Haywood of Raleigh. (Applause.)

Dr. Hubert B. Haywood: The serum treatment of pneumonia seems to be definitely in the forefront of our therapeutic armamentarium in regard to pneumonia at the present time, and the efficacy of its use in the earlier cases has been established apparently. Many states have adopted a whole-time program with this serum, and the results, where the statistics have been carefully kept, are very gratifying as to cure.

Dr. Haywood then presented his prepared paper, making the following interpolations:

1. before the words, "The figures of the combined admissions to Bellevue Hospital," on page 718: We recently had a case in Rex Hospital, in which really the X-ray pictures, and the sputum were the only definite indications. He had a Type II pneumonia, and there was just the faintest sort of shadow. We couldn't find any physical signs at all.

2. before the words, "Cecil reports in a series of 160 cases," on page 719: We had ten cases, I think, of serum-treated pneumonia in Rex Hospital this year, and our results certainly have been dramatic. I think all except two were Type I.

3. before the words, "As soon as the diagnosis of lobar pneumonia is made," on page 719: They claim, I believe, that there is a higher toxicity from the rabbit serum than from the horse serum due to difficulty in concentration and refinement of the serum.

4. before the words, "Serum sickness occurs," on page 720: A recent book by Dr. Lord of Massachusetts Commission — I think it is just off the press — reports that in 1,775 cases they have had three serum deaths, and I believe he lists those as deaths that might possibly have been prevented by them.

5. before the words, "Very ill persons require more serum," bottom of page 717: The symptoms disappear in a few days' time. We noticed that in the few cases we treated there was that delayed serum sickness which didn't amount to very much, and they seemed to recover very early.

Dr. Haywood then concluded the reading of his prepared paper. (Applause.)

THE SERUM TREATMENT OF PNEUMONIA

Hubert B. Haywood, M.D.
Raleigh, N. C.

In the light of newer and authentic knowledge of the etiology and bacteriology of Pneumonia, it is not an unreasonable classification to consider it as thirty-two distinct diseases, due to thirty-two different strains of pneumococci.

It is indeed pouring old wine into new bottles and getting a new and distinct flavor to the wine if we further look at this disease from the standpoint of new and specific remedies for an old and deadly symptom complex which we call Pneumonia.

Therapeutic sera have been produced for types I, II, V, VII, and VIII, and perhaps others. A recent serum produced from rabbit's blood has been perfected for type III. Fortunately the majority of cases of Lobar Pneumonia fall within these relatively few types.

If serum for these specific types of Pneumonia are given not later than the third or fourth day following the onset of the disease, the results in many cases are miraculous.

Therefore with this defense in our hands against a disease which stands in third place as a cause of death in the United States, a double responsibility exists. The patient has one, namely to call the doctor early in order that he may diagnose the disease promptly and give appropriate treatment.

On the doctor lies another, because he must use all of his deductive powers to make an early clinical diagnosis of Pneumonia, and to establish an accurate bacteriological diagnosis of the specific type of Pneumococcus.

A diagnosis can often be made on symptomatology alone, in fact the very early diagnosis must usually be so made. The symptoms may appear singly or in combination, and may vary considerably in intensity. Definite physical signs may be several days in developing. To await these may mean the loss of extremely valuable time. The occurrence of any of the following symptoms should arouse the suspicion of Pneumonia: (1) Sudden elevation of temperature; (2) Chill; (3) Pain in the chest or side; (4) Blood tinged or rusty looking sputum. Too much time should

not be wasted on a differential diagnosis between lobar and bronchial Pneumonia.

1. Prompt bacteriological studies are essential to adequate treatment on a scientific basis.

2. Sputum examination should be obtained as early as possible and sent to an approved laboratory for typing.

3. Blood Cultures should be taken. These are important not only in diagnosis, but also in determing the course of treatment.

4. In the absence of a sputum specimen, a throat swab taken during the act of coughing should be sent to the laboratory immediately for culture.

5. The most rapid and efficient diagnosis may be made from the sputum. Other methods are laborious and slow. Therefore, every effort should be made to obtain such a specimen since valuable hours may thus be saved.

Sputum raised by a cough from the bronchial tubes is desirable. Saliva and postnasal discharges are undesirable as they are of doubtful value and misleading.

Neufeld in 1902 described the specific capsule swelling reaction when Pneumococci are acted on by an homologous immune serum. He appears not to have recognized its applicability to typing until thirty years later.

The simplicity, quickness, and accuracy of the test, and the availability of the immune serum for typing has made the Neufeld reaction the one commonly used, and has been a large factor in popularizing the use of serum in Pneumonia.

A positive sputum and a positive X-ray picture of the chest may be the only positive signs of an early Pneumonia, and with the presence of symptoms indicative of acute lung inflammation justify the early use of serum when the Pneumonia organisms have been accurately typed. The incidence of types varies from year to year.

1. The figures of the combined admissions to Bellevue Hospital and Rockefeller Hospital show:

Pneumococcus Type 1—592 cases. Per cent, 36.5.
Type 2—402 cases. Per cent, 24.6.
Type 3—215 cases. Per cent, 13.2.
Type 4—422 cases. Per cent, 25.5.

Types 1 and 2 comprise 51.1 per cent.

1. A high Leucocyte count with a shift to the left is a good prognostic sign. The so-called Schilling count.

Pneumococci can be demonstrated in the blood in one-third of all the cases of the disease. The prognosis of the disease is closely related to the degree of bacteremia present.

A few bacteria in the blood early in the disease is not as grave a prognostic sign as does a late blood stream infection. Under any circum-

stances bacteremia indicates a grave situation, and is associated with extensive lung infection.

Bacteremia usually occurs after the third day. In non-serum treated cases the incidence is 25 per cent in Type I and 43 per cent in Type II. The mortality of Bacteremias is close to 75 per cent if serum is not used, but may be reduced one-half with the use of serums given promptly, and in adequate amounts.

The object of serum treatment is to try to administer to the patient a serum containing the same immune bodies which he is trying to develop, agglutins, precipitins, and opsonins. The immune bodies in Pneumonia are probably anti-bacterial rather than antitoxic. The immune bodies of human serum are also found in the serum of animals inoculated against the pneumococcus. Patients recovering from pneumonia develop a large amount of this protective substance at about the time of the crisis or lysis.

The clinical effect of Type I serum on patients with Type I Pneumonia is often dramatic if given in the first twenty-four hours of the disease. The disease may terminate by crisis within a few hours after the injection of serum.

2. Cecil reports in a series of 160 cases with serum given on the first day, a death rate of only 5 per cent.

In a series with the serum given within the first four days in 744 cases a death rate of 9.6 per cent.

In 641 cases after the four days, a mortality of 23.4 per cent.

In 762 cases in which no serum was given, a mortality of 37.7 per-cent. Cecil, Buloeva, and Finland report favorable results with the Serum Treatment of Types II, V, VII, and VIII.

Results of Serum Treatment for various types of Pneumonia:

Type	Cases	Deaths	Serum Treated Per Ct.	No. Serum Per Ct.
I	1,494	234	15.7	37.7
II	490	162	33.0	46.3
V	93	9	9.6	28.8
VII	49	3	6.1	22.0
VIII	40	3	7.5	18.6

Type three serum has been prepared from rabbit serum due to difficulty in immunizing horses to type three Pneumonia. The reports from its use are encouraging.

A serum from Pneumococcus Type XIV due to its prevalence among children has been prepared.

3. As soon as the diagnosis of Lobar Pneumonia is made, steps should be taken to determine the pneumococcus type. This can be done very quickly by the Neufeld method.

Preliminary to serum administration, the patient is carefully questioned as to previous injections of horse serum as well as to the history of hay fever, asthma or other allergic phenomena.

A conjunctival test with 1-10 dilution of horse serum is next made, and also a skin test is advisable.

After fifteen minutes if the test is negative, 1 c.c. of serum is slowly injected intravenously. If any signs of allergy appear as increased dyspnea, cyanosis, flushing of the face and urticaria the needle is withdrawn and 0.5 c.c. of Epinephrin solution injected sub-cutaneously. Epinephrin may be repeated if necessary.

After the first injection of serum there is little danger from reactions from subsequent dosage, so larger amounts may be administered. A second injection of 15 to 20 c.c. is given intravenously from one to two hours later, and this dose repeated every two to three hours until the patient has received about 100,000 units of serum. The amount of serum administered on the following day is determined by the condition of the patient. If, as often happens, the patient's temperature drops to normal, no further serum treatment may be necessary. If on the other hand, the patient's condition is worse, or if it remains unchanged, intensive treatment is continued.

On the third day the same policy is pursued. It has been found practically that if any benefit is to result from serum treatment, it is usually apparent after two or three days of treatment.

Septic patients and those with a severe Type two infection should receive somewhat higher dosage than that listed above.

Serum reactions may be manifested by an early allergic phenomena with dyspnea, cyanosis, flushing, and shock. Prompt medication with Adrenalin 0.5 c.c. is usually effective although death may ensue, but seldom where proper precautions are taken. Thermal reactions with chills and high fever about thirty minutes after serum injections are very rarely, if ever, fatal.

3A. Serum sickness occurs in less than 25 per cent of the patients receiving the refined type of Felton's serum.

Symptoms usually appear seven to fourteen days after the injection of serum.

It is manifested by fever 101° to 102° and urticoria and painful and swollen joints. The symptoms disappear in a few days.

4. Very ill persons require more serum because pneumococci are virulent only because they possess capsules, which in some mysterious way prevent leucocytes from taking them up and attracting them.

In ill patients there is a large amount of this capsular substance in the blood which fixes the antibodies in the serum, hence there has to be an amount of serum in excess in order to attack the capsules, hence the necessity for early and adequate dosage.

In Massachusetts Type I and II Serums are manufactured by the

state and distributed free. Soon V, VII, and VIII will be distributed. The issuance of 60,000 units of Type I and 100,000 units of Type II is authorized.

An additional 60,000 units of either type is permissible under three categories:

a. Maternity patients.

b. Patients with a positive blood culture of Type I or Type II Pneumococci.

c. Patients whose temperature does not fall to 101° F. or under in eighteen hours, or in whom the temperature, after having fallen, has risen again to or above 101° F. in forty-eight hours.

Older people require more serum than younger ones as also do people past middle life.

There is necessarily a great deal of new information and change of thought about a subject which is now the center of so much research and interest.

Two of the higher types of the group four series have been found to be the same.

Due to the relatively low death rate of lobar pnuemonia in children it is considered by some men of experience a doubtful measure to give serum to them as theoretically children are more serum sensitive than adults. Under any circumstances a syringe with a c.c. of adrenalin solution should be at hand when the serum is administered to either an adult or a child.

Type 3 serum, which is made of rabbit's blood is more toxic than others, due to difficulty in refinement and concentration.

Types 1 and 2 are rarely found in normal mouths. Types 3 and 4 are found fairly common. People who have been exposed to a case become carriers, and the susceptible individual contacted becomes the victim of an attack.

If in your typing you get one of the higher and unusual types, retype from another specimen of sputum as the numerically lower types are more common.

Relapses within one to two weeks are usually reinfections with a different type brought to the patient by a carrier and spread rapidly in an already well fertilized area for growth. Necessarily, they should be retyped, and if serum is to be given again should be retested for sensitivity to horse serum.

Avoidable Causes of Failure

1. Delay in serum treatment.
2. Lapse of time in typing.
3. Acceptance of a type other than 1 and 2 in sputum without repetition of typing, and a possible consequent error of 10 per cent.
4. Insufficient serum.

5. Low potency.

6. Too long intervals between dosage.

7. Severity of case, demanding more serum, as age, pregnancy, more than one lobe involvement; bacteremia, and a spreading lesion.

Summary and Conclusions

1. There are thirty-two different types of Pneumocci which are divided into groups 1, 2, 3, and 4. Group 4 comprises all types from 4 to 32.

2. Serum is available for types 1, 2, 3, 5, 7, and 8 which comprise the majority of the cases of Pneumonia.

3. Typing may be quickly and cheaply done with simple apparatus.

4. An early clinical diagnosis is essential. All the facilities of the laboratory including blood culture, the examination of the sputum for type specific pneumococci and an X-ray of the lungs when it can be done should be undertaken immediately as the serum is efficacious in proportion to its early and adequate administration.

5. Late cases, third day extensive involvements in more than one lobe, older people and bacteremias require large dosage. Double the initial dosage.

6. Effects of serum treatment:
   (a) If given early on first or second day, it may be expected to cause a critical fall in temperature, pulse, and respirations, and also a disappearance of toxic symptoms.
   (b) Prevent spread of infection to other lobes.
   (c) Sterilize the blood stream.
   (d) If given on the third and fourth day, similar results may be obtained but are less certain.
   (e) If given after the fourth day, its value is uncertain.

President Foster: We will ask Dr. A. C. Bulla of Raleigh to open the discussion. (Applause.)

Dr. A. C. Bulla (Raleigh): Mr. President, Ladies, and Gentlemen: Dr. Haywood has given us a very interesting paper on a very interesting disease, pneumonia. Serum treatment for pneumonia is something new in North Carolina.

Dr. Haywood is chairman of a committee on the control of pneumonia in this state. He has a big job on his hands if he gets the doctors of North Carolina to use it as it should be used, as has been proven in the State of New York, and in the State of Massachusetts. They have done the pioneering work in finding the proper procedures other states should take in controlling, preventing, and curing pneumonia. Any disease that has as high a mortality as pneumonia has in this state deserves our immediate attention.

I think this paper should have been read before one of the General

Sessions. I presume Dr. Haywood's object in presenting it to the health officers is to see if he cannot get some help in an educational way in getting this modern treatment into effect by the physicians of the state. It has already proven its worth. If it had not Dr. Haywood, conservative as he is, would not be advocating it to a group of health officers. So as men engaged in the public health program with the responsibility of educating the people—I wouldn't say doctors, but the people—to a newer treatment of pneumonia, he is appealing to us to help him get this to the doctors, and to the public.

We have something to do if we do it as early as it ought to be done.

The doctor has emphasized the importance of early diagnosis, early treatment, and for the doctors to do this they must have some means, some aid for making early diagnosis, and receiving treatment serum so they can give it to their patients early.

I hope that we will take this new treatment for pneumonia seriously, and get it across to the public as well as to the doctors.

We all know that even though Jenner discovered the vaccination for smallpox several years ago, more than a hundred years ago, not all today believe in being vaccinated against smallpox. We know that Pasteur and Lister had their troubles along in their day and time in getting people to take on newer treatments, newer discoveries — believing in new discoveries — but today we are carrying on with smallpox vaccinations, with diphtheria immunizations, and in many fields of public health protection, and public health measures for the protection of the public. We are going to take on this newer treatment, and do our part in an educational way to get the people to take it, and the doctors to use it. (Applause.)

President Foster: Is there any further discussion of Dr. Haywood's paper?

If not, I will ask Dr. Haywood to close.

Dr. Haywood: Mr. Chairman, I wish to thank you for the compliment you paid me in inviting me to present this paper here, also to thank Dr. Bulla for his discussion.

I think it is a problem for the health officers as well as the practitioners, because the State Board of Health has tried to make training in typing available for technicians all over the state, and I am sure that in the course of time serum will be distributed in North Carolina just as it is in some of the other forward-looking states in the United States.

Dr. Bulla and I are both proud of Wake County, and its commissioners, largely through Dr. Bulla, and the interest of two other men in the county, have set aside a certain sum of money for serum for indigent people.

I believe it is estimated that from two to six cases of lobar pneumonia are treated every year by general practitioners. Those are Massachu-

setts' figures, and I presume they follow in North Carolina. The figures from Duke Hospital are that in their seven years as a hospital they have treated 109 cases of lobar pneumonia. Their experience with Type I serum which has been available for a longer period of time than the other serums has been very satisfactory in their hands. (Applause.)

Dr. Carl V. Reynolds (Raleigh): Would you be good enough to open that subject for discussion?

President Foster: I will be glad to.

Dr. Reynolds: Looking about in this audience I see two very prominent men who know a great deal about this subject, and have had a great deal of experience with it.

First, I would like to say this: That we have had three important questions put before us today. One was the tuberculosis question for which we haven't a specific, but in which fresh air, sunshine and food, as somebody mentioned, plus surgical procedure today, have reduced the mortality since 1900 from 200 down to about fifty-eight, I believe.

We have the program before us on syphilis which we can eradicate with a specific, and we are going to set about doing it.

We have another dream, and that is the free distribution of pneumonia serum to those patients so unfortunate as to be attacked with pneumonia in North Carolina.

When you think about it and realize that we have 3,000 deaths from pneumonia, and of that 3,000, 1,600 from lobar pneumonia, 51 per cent of which can be cured, then it is a challenge. It is a three-sided challenge: tuberculosis, syphilis, and pneumonia. It is a challenge to the health department, it is a challenge to the medical profession, and I believe we will accept it.

I arose, Mr. Chairman, to ask Dr. Smillie and Dr. Rosenau to discuss this important question, please. (Applause.)

President Foster: Dr. Smillie, would you be kind enough to discuss this for us?

Dr. Wilson G. Smillie (Cornell University Medical School, New York City): Mr. Chairman, I hesitate to monopolize the discussion today, but I am very much interested in this question, because it happens that Dr. Rosenau and I both went through the preliminary stages of this method that has been described for the control of pneumonia, and we had our troubles, as you can well imagine.

We learned a lot of things, of course. One thing we learned about pneumonia, as was mentioned in the discussion on tuberculosis today, was that although Laenec was a great man when he invented the stethoscope he made a mistake when he suggested that it be used for the diagnosis of early pneumonia and tuberculosis. You might just as well throw your stethoscope away when it comes to early diagnosis of pneumonia and tuberculosis, as the speaker has said.

The essential thing in the treatment of lobar pneumonia is early diagnosis, and it is necessary to make the diagnosis before the physical signs have appeared. As in diphtheria, the earlier the treatment, the better the result.

Another thing that must have disturbed you, I am sure, was that when you studied about the pneumococcus there was only one pneumococcus, but now there are thirty-two. How in the world can anybody make a diagnosis between thirty-two different types of pneumococcus? It seems incredible that such a thing can be done. It is just as easy as can be. There is no difficulty about it at all. What is done ordinarily in the typing is that it is simply divided into three groups, and you can determine in five minutes whether that sputum falls into this mass, that mass, or that mass. There are about ten organisms in each group, and having determined that then all that is necessary is to run it down, and the whole diagnosis can easly be made in a very, very few minutes.

It is simple, it is easy, quick. That part of it is all solved for you, and you need have no apprehension that a mistake will be made in the diagnosis of the type of pneumococcus.

It is true that sometimes the sputum sample isn't very satisfactory, and you may get a negative type, that is, one of the higher non-virulent types, and you have have to send back the sputum again. That is true, of course, of any laboratory technique. But if you get a positive result with one of the virulent types, then you can depend upon it that you can go ahead and give the serum treatment.

The serum treatment requires careful technique, as the speaker has said. It is not an easy thing to do at first, and it must be learned, but it can be mastered. As an illustration, there was a doctor in our community who had never given a pneumonia serum. I was working in an insane institution where we had an epidemic of Type II pneumococcus pneumonia, and one of the attendants got sick. I was very anxious to find out if he had pneumonia. He had gone on to his home, twenty miles away. So I telephoned out there and asked the doctor what was the matter with that man.

He said, "He has pneumonia."

I was interested right away because it tied in with the study we were making. I said, "What type?"

He said, "My God, are there different types?"

"Yes," I said, "there are different types, all right, and some types we have a serum for, so we might be able to help him."

"How do you find out what type he has?"

I said that if he would take the sputum in to the health department—he was within ten miles—they would type it for him, and if it was I or II, IV, V, or IX, they would give him serum for it. I suspected it was Type II.

There was a bitter storm that day and about 5:00 o'clock, just as I

was ready to go home, the doctor made his appearance with a whole quart bottle of sputum. He brought it to me instead of taking it to the health department.

"Well," I said, "why didn't you take it down there?"

"I didn't know how to get there and I knew you, so I brought it to you."

I said, "It wouldn't do any good if I did type it. Why don't you take it down?"

"I don't like to drive in that heavy traffic."

I said, "I will go down with you."

He said, "I will stay in the car. You take it upstairs."

So we took the sputum up, and in five minutes we had the diagnosis. It was Type II. Dr. Hevron, who wrote this paper of Dr. Lord's got the serum, and went down and talked to the doctor. He told him the patient had Type II pneumonia and said, "Here is the serum. Take it home and give it to him and he will be all right."

"Oh," said the doctor, "I couldn't do that. I never gave that stuff. I wouldn't know how to give it."

We said we would give it for him. So we made the diagnosis for him, got him the serum and gave the treatment, and the man, of course, did very well indeed.

That was an illustration of a man who hadn't kept up to date in his profession. He didn't know there were different types of pneumonia serum, and when he was told about it and had the type discovered for him he didn't know how to give the treatment and was afraid to try it. But I tell you he learned. All he needed was that one illustration. We showed him once, and he has been giving pneumonia serum ever since.

It isn't so difficult to give the serum. The results are fine. They are extraordinary. I am sure that you will find, just as the speaker has stated, that in these types of pneumonia where a seurm has been found to be of value, and when it is given early, just like that, down she comes —and if it doesn't something has gone wrong. Then you either type it again, or give it again, and the patient will come through the woods all right. It is spectacular. There is no question about the value of the serum in properly selected and properly treated cases.

There is another thing that we must get away from, and that is the pathological diagnosis of pneumonia, that it is this type or that type of pneumonia, on an anatomical basis. The thing you are interested in is: Is it a pneumococcus pneumonia or isn't it a pneumococcus pneumonia. Ninety-five per cent of lobar pneumonias as we classify them now are pneumococcus pneumonia and 50 per cent of bronchial pneumonias are also pneumococcus pneumonias. So the essential thing is, whether you think it is a bronchial pneumonia or lobar pneumonia, to find out whether it is a pneumococcus pneumonia, and having found that out, then to find out what type it is, and then give the appropriate serum.

As the speaker has said, there is available at the present time good serum for Types I, II, V, VII, VIII, and XIV. This winter we have had splendid results with Type XIV, and as Dr. Reynolds said this noon in discussing this matter, he feels perfectly confident that the time is not far away when all the virulent types of pneumococcus will have an appropriate serum.

There is another thing I forgot to mention, which is interesting and important, that we have the thing already well in hand, because although there are thirty-two different types of pneumococcus, many of the higher types are relatively avirulent and seldom produce severe types of pneumonia. The essential, the severe, the important types of pneumococcus pneumonia are already pretty well under control. (Applause.)

President Foster: Dr. Rosenau, will you add to this discussion?

Dr. Milton J. Rosenau (Chapel Hill): I can't add to it, but as long as you have called on me, I might say this: I couldn't help thinking, while my good friend Dr. Reynolds spoke of tuberculosis and syphilis, and now pneumonia, and mentioned my name for the discussion, that I am very reluctant to speak about any disease with which I have not had personal experience (laughter) so the first two names are out. (Laughter.)

I am Exhibit Number 1 for pneumonia, for a few years ago I had Type III for which there is no serum. I fooled my doctors, including Dr. Smillie, by getting well, much to their surprise, and I don't know what else. (Laughter.) But what I proved was that only the good die young. (Laughter.)

Now about pneumonia: Pneumonia is a persnickety disease. Everything seems so plain and simple when a master like Dr. Smillie explains it—and it is as he says it is. We have here a life-saving remedy which has beneficent effects. We can certainly save half of the cases, and when we know how to use it better we will have a reduction in the case fatality rate of even more than fifty per cent.

From the public health standpoint there is more to it than that, I think. It has been mentioned, and I would just like to suggest this: I believe that as public health officers we sometimes forget that pneumonia must be grouped, and in our minds should be considered with the other communicable infections, and should be treated as such with sanitary isolation, concurrent disinfection, and so on. It is true we do not have great epidemics of pneumonia. It lacks focal concentration as a rule. Even the epidemics are relatively small, when compared to other diseases which prevail in epidemic form. But it is communicable, it is contagious in a sense, and we can prevent carriers, we can prevent the broadcasting of the important types, I, II, III, V, VII, VIII, XIV, and so on, by using necessary measures.

So I think this should be kept in mind: That that is a rather important phase, and although we are not going to control pneumonia that

way, nevertheless it is just commonsense to treat pneumonia with sanitary respect.

There is another thing about this situation, and I don't want to throw cold water on it, because we have something here that has goodness, that saves lives and prevents suffering and all that sort of thing, but it has limitations. There is another viewpoint that I think we should keep in mind: That it is just like diphtheria antitoxin. There is nothing to be said derogatory to diphtheria antitoxin. It must be given early, you must give it in sufficient amounts and after correct diagnosis, and all that sort of thing. The same thing applies to the pneumonia serum. You must make the diagnosis early, give it correctly, and so on. And when we do that we will save lives. But neither diphtheria antitoxin nor antipneumococcic serum—whether it is antitoxic or not—or any other antitoxin, will ever control or prevent pneumonia. We are never going to prevent pneumonia by that. We are going to save the lives of those who get the disease, who are unfortunate enough to become infected, but the control of the disease depends on something else.

It depends on two things: First, like every other principle of communicable infections, avoiding the infection, and second, designing, revealing some substance which will prevent ill effects in those who are infected. I am not privileged to say it now, because I have been the Chairman of the Pneumonia Commission for only eighteen years (laughter), but there is being developed a substance which has preventive virtues. When we have that maybe you won't have to use so much serum, and that would be a blessed day, of course, when it comes. There have been experiments made with many thousands in CCC camps in the last four years, and now throughout the Army and so forth, and perhaps these results may be of use.

I just mention this as one of the forward-looking and optimistic viewpoints in this disease. We have to think not only of the cure of the disease, which is both a medical and a public health problem, but of its actual prevention and control.

Before I sit down, I would just like to pay my respects to our leader and champion, Dr. Reynolds, who for so many years has worked so hard to put the public health work of North Carolina on the map, not only in syphilis, tuberculosis, child hygiene, and all the other things, but now, from the conversation we had at lunchtime, I know he is going to put the pneumonia program right into the state, and the citizens will have the benefit of the life-saving virtues of this antitoxin. (Applause.)

President Foster: Is there any further discussion on Dr. Haywood's paper?

If not, I will ask Dr. Elliott to read three telegrams that we have here, I believe.

Secretary Elliott: Members and Guests: I am really very sorry to announce and read these telegrams in explanation of an announcement

that we have to make at this point in our program, that this year we will not have the paper pertaining to public health nursing. Because of sickness, and an unusual amount of work Miss Clara Ross, Supervising Nurse in Charlotte, has wired as follows: "I regret to inform you that I cannot be at the meeting or present a paper for discussion. I telephoned to Miss Bayley."

Miss Bayley is Supervising Nurse in Asheville. She was to open the discussion of Miss Ross' paper. This is a wire from Miss Bayley we received: "Miss Ross phoned Sunday, not reading paper. Sorry to cancel engagement this late date."

In spite of all that our Association and our interest in public health nursing seems about to receive national recognition. The third telegram says: "The National Organization for Public Health Nursing sends greetings to the North Carolina Public Health Association and best wishes for a stimulating and helpful meeting.

"Grace Ross, *President.*"

President Foster: At this time—we have some more papers on our program, most interesting ones—I am sure you all are tired and would like to get up and stretch for about two minutes.

There was a brief recess at this point.

President Foster: Dr. G. M. Cooper of the State Board of Health will introduce our next speaker.

Dr. G. M. Cooper (Raleigh): Ladies and Gentlemen: All of you are familiar with the program that we have sponsored at the State Health Department in the Division of Maternity and Infancy Welfare, and in the last eighteen months we have undertaken in the Bureau to give assistance to those organizations, particularly to the women's organizations and the welfare groups in the state, in an effort leading toward adopting the European idea of birth control, that is, a positive breeding of better family children, more of them, and the curbing of the breeding of the undesirables.

We adopted this on the understanding that it is a public health enterprise, because there is no other means except organized medical societies to put over the program. They do not have the administrative machinery to carry it out, so we have adopted the idea of working purely through the health officers, and the physicians practicing in the communities. To date we have been highly successful in making some studies and investigations on the program. It has been entirely voluntary on everybody's part. There has been no compulsion or compelling of anybody to do anything about it. There is just one point, and that is that the program was ready to be launched by a group of welfare officers. We took the ground that it was a dangerous procedure for a group of laymen to handle, and therefore we are holding this program in medical channels, as we are interested in the medical indications.

Dr. Clarence J. Gamble, formerly a member of the faculty of the University of Pennsylvania, and at present connected with one of the national organizations, has coöperated with us in this program. He has been invited down here today to discuss some of the program and some of the methods.

I take pleasure in presenting Dr. Gamble. (Applause.)

CONTRACEPTION AS A PUBLIC HEALTH MEASURE

By Clarence J. Gamble, M.D.

The stages through which a disease passes on its road to medical extinction are well illustrated by the history of tuberculosis. The first stage of diagnosis is necessary clearly to separate the disease in question from those which it resembles. For tuberculosis, diagnosis began with the ancient Green physicians. There follows the stage of development of medical tools for the more accurate recognition and the cure of the disease. In the case of tuberculosis this development of tools was long delayed. It was not until 1870 that Trudeau, recognizing in himself the symptoms which medical textbooks classed as invariably fatal, invalidated this prognosis with extensive rest. Not until a decade later was the bacillus identified and cultured, and a diagnostic stain developed. At the turn of the century came the X-ray, now so important a factor in the management of the disease.

The third stage in the control of a disease is one of education. First the physicians must be taught the use of the newly discovered tools. Subsequently, the laymen must learn their value to him, both for protection and for cure. For tuberculosis, this process seemed a slow one, but it is becoming increasingly complete. It took time for the value of rest-treatment to be recognized by the profession, and longer still for the medical schools to distribute this knowledge and that of the more delicate methods of diagnosis to all of the doctors. It has taken longer still for the National Tuberculosis Association to educate the public as a whole to appreciate the need of universal examination for the disease.

But to a great extent the fourth or final stage has now been reached in the control of tuberculosis. Voters and taxpayers have become sufficiently convinced of the need of tuberculosis-control to furnish the funds for the measures which you, as public health physicians, have long advocated. The value of the results are shown by the steadily falling curve of mortality from tuberculosis, which points to an early extinction of this dread disease.

"How," you ask, "is this related to contraception? Surely babies are not a disease." In this you are correct. It is far from my intention to say that children are to follow syphilis as "the next great plague to go." There are too many healthy, wanted children in our own family to say that. Yet there are, unfortunately, conditions under which a pregnancy

can bring just as much unhealthiness and unhappiness as can any contagious disease. In tuberculosis, for example, about which Dr. Denholm told us this morning, all recognize that pregnancy affects the outcome unfavorably. In venereal disease, discussed by Dr. Hege this afternoon, it is obvious that the next generation must be protected by the prevention of pregnancy until the disease is under control. You know of many cases of renal disease and of cardiac conditions where it is similarly necessary to postpone pregnancy.

But more important in the total effect upon human health and happiness, because more frequent, there are sociological indications. About 140 years ago Malthus pointed out that unlimited population increase would eventually result in famine because of failure of the food supply to increase at a corresponding rate. Subsequently, Francis Place, in England, and Charles Knowlton in this country, began the application of the theory to individual families and to groups. For unwanted children, the stage of diagnosis may be said to have begun.

Each of you can tell of families in your practice in which the diagnosis of excessive fertility is all too obvious. As a typical example let me tell you of a Philadelphia family whose photograph was included in the article on birth control in the magazine, *Fortune*. The father is of a low mental grade. He was a steel worker, at one time earning $15 to $20 a week. He drinks heavily and when intoxicated beats his wife and children so extensively that for the past five years it has been considered safer for the family to keep him most of the time in jail. To be cared for by such a parent came four children in the first four years of married life. The mother then decided she had all she wanted. Nature, however, did not agree with her and six more children were added to the family in the next sixteen years. At that time a survey showed that for the preceding five years, the cost of the family to the community's social agencies and for relief, exclusive of the jail costs, had amounted to $5,088. When it is considered that the oldest boy is so feeble-minded that he could not hold a relief job, the 17-year-old girl is in charge of the juvenile court, and the 7-year-old child, as the result of an early infection, is an orthopedic case, it is difficult to list the family as a great social asset.

They do, however, illustrate the social value of contraception, for following a visit to the Philadelphia Maternal Health Centers, six years have passed without further pregnancies to increase the family problems.

The widespread practice of abortion furnishes another indication for the control of unwanted children. It is estimated that 700,000 abortions are induced in this country every year. Accurate statistics indicate that one-fifth of the maternal deaths folow abortions, 9/10ths of these occurring in married women who choose this dangerous method of limiting

their families rather than bring another child into the unfavorable surroundings to which it would be destined.

And for the health of the children themselves, some form of postponement of pregnancy is needed. An extensive survey by the United States Children's Bureau has shown that for children born a year or less apart the infant mortality was 147 per 1,000 births. In the same group of mothers where the births were separated by more than 12 months the mortality was only 98, and with greater spacing it fell still further.

Beyond these medical and sociological indications for contraception, I feel that there is an important psychological indication. Children should come into a family only when they are wanted. This assures not only the physical and economic preparation of the family, but satisfactory psychological surroundings resulting from the complete acceptance of the child by the parents. With your help, therefore, every child in the United States should be made a wanted child.

The development of medical tools for the control of unwanted children has been slow. The use of an animal cecum as a sheath was well known two centuries ago. It was not until the discovery of the vulcanization of rubber that an advance was made in quality and in cheapness. The further improvement made possible by the latex process is an event of the last decade. The sponge, recommended by handbills published in 1823, has not received wide acceptance. The vaginal diaphragm, though mentioned in pamphlets of 50 years ago, has not been extensively distributed until the last fifteen years.

Beginning three years ago, a contraceptive tool, peculiarly well adapted to public health work, has been developed. A foam powder has been devised which converts a moistened sponge into a reservoir of spermicidal solution. The method has the advantage that the pelvic examination, which deters so many mothers from using contraceptive methods, is not a necessity.

The third stage in the control of unwanted children, that of education of the physicians and of the public, has begun but is far from complete. When I graduated from the Harvard Medical School in 1920, the class had been given no formal instruction in contraception. Fortunately, at present, more than half of the medical schools devote some time to the subject, but it is obvious that the great majority of practitioners have not had, and cannot be expected to have had, special training which expertness in the modern birth control techniques demands. It is to be hoped that medical journals and post-graduate courses may be more and more opened to a distribution of the newer developments in this field.

But there is one place where the program of making every child a wanted child has progressed remarkably. In North Carolina the final stage in medical control has been reached, and contraception has

been added to the public health services. This is not surprising, for North Carolina has been a leading State in this field for a long time. The first bill introduced into the House of Representatives to eliminate the restriction on physicians in their use of contraceptives was presented by Frank Hancock, of Oxford, North Carolina. The North Carolina Conference for Social Service was the first Social Worker's Conference to pass a resolution in favor of birth control. Your State was among the first to pass a sterilization law.

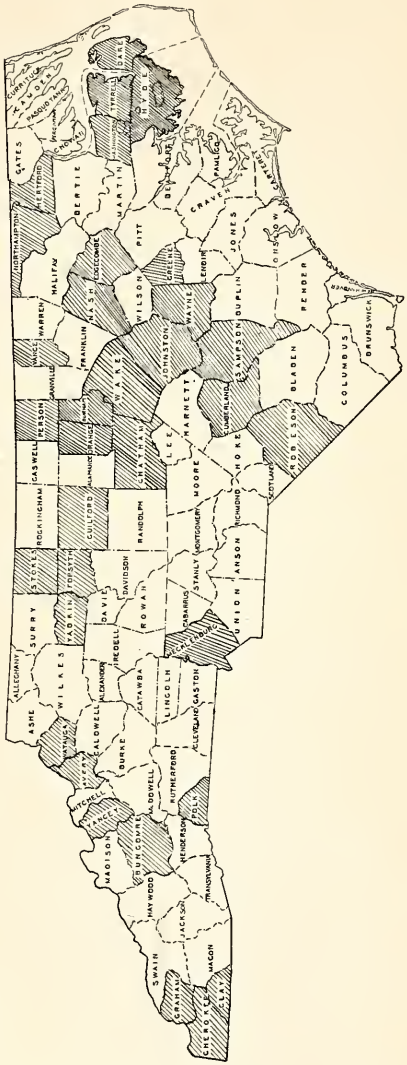
The prograss has been much greater in the last year. Because of the progressive stand which Dr. Reynolds and Dr. Cooper of the State Board of Health have taken, and of the program which has been carried out by Dr. Norton and Miss Pratt, knowledge of modern contraception has been made available to the County Health Officers who have desired it. As a result 33 counties[1] have now added contraception for underprivileged mothers to the other medical services provided. Although the map shows many unequipped counties, no other State in this country, indeed no country on the globe, has done so much at government expense. For that reason your State deserves many congratulations.

It is of importance to determine the effectiveness of the contraceptive tools with which physicians are now equipped. In Philadelphia, at the Episcopal Hospital, jelly and nozzle outfits were sold to postnatal cases desiring them for thirty cents each. A follow-up after approximately two years showed that a marked reduction in the number of pregnancies had occurred.[2] Before purchasing the jelly, there had been 69 pregnancies per hundred mothers for each year of exposure to pregnancy. For those who stated that they had used the jelly on every occasion this was reduced after the purchase of the jelly, to 4 per hundred mothers per year. For the majority, those who had "usually" employed the jelly, the rate was 9.

In any decision as to the effectiveness of the method it is difficult to distinguish between failures of the method itself and failures of the patient to use it carefully. For this reason a series of private cases, most of them college graduates in the practice of Dr. Lovett Dewees in Philadelphia,[3] is of especial interest, for they may be presumed to have been intelligent and consistent in carrying out directions. Among those for whom diaphragm and jelly had been prescribed, unwanted pregnancies were found to occur at the rate of 6 per hundred couples per year.

Many of the County Health Officers of North Carolina who have installed contraceptive services prescribe the foam powder and sponge method. For this reason the results of a series of underprivileged cases who used this method under the direction of Dr. Lydia DeVilbiss[5] in Miami are of especial interest. Five hundred cases were found to have had a pre-clinic pregnancy rate of 80. After an average time of 12

months, follow-up visits were made. When all the cases were included, even those who stated that they had never used the method, the post-clinic pregnancy rate was 30, a marked decrease from the previous figure. When the calculation was limited to those whom the nurse con-



Shaded areas show counties where contraceptive services have been established by the County Health Departments. (March 1938.)

sidered to be regular (though not perfect) users, the pregnancy rate was 8 per hundred mothers per year of exposure. To express the same result in a different way, there would be in this group on the average an interval of 12 years between the end of one pregnancy and the

beginning of the next. This, of course, is not perfect, but when one considers that it indicated only one undesired pregnancy for approximately 1,000 uses of the method, it is easy to see that it compares favorably with other medical procedures. Tuberculosis and typhoid are being controlled by methods which are admittedly imperfect. The problem of unwanted children can be similarly solved with the tools already in our hands.

In the control of unwanted children your position as Public Health Officers is peculiarly important. The families most in need of contraceptive advice are the underprivileged, and it is primarily your opportunity to meet their medical needs. Furthermore, though this may seem a new thought to you, among the services which you can give, that of birth control is of the greatest importance. If, through your share in the current cancer campaign, you save a carcinomatous life, you have probably rescued two decades or less of existence. Syphilis, which is the objective of another campaign, comes earlier in life, and a cure may improve three or even four decades of life. In diphtheria, primarily a childhood disease, five decades may hang in the balance. But with contraception, it is possible for you to enable an unwanted child to avoid an entire lifetime of unhappy, unhealthy surroundings; and to allow the families under your care to reserve their birthrights for truly wanted children with reasonable assurance of a desirable life. Can any medical problem be more important?

Is contraception needed in North Carolina? You can readily answer that. Thirty-six other states have a better record in maternal mortality. Adequate distribution of contraceptive information will decrease the induced abortions and improve that record. At present North Carolina's population is increasing at the rate of 1 per cent per year. If that increase came from the more intelligent levels it would be a cause for pride, but unfortunately this is not the case. Dissemination of contraceptive information through public health channels, however, will tend to correct the present unfortunate differential birth rate and improve the quality of the next generation, a matter of far greater importance than the mere quantity.

And now, though North Carolina has extensive accomplishments in its contraceptive program, of which it should be proud, may I add that it has not done enough? Thirty-three County Health Departments provide contraceptive services, it is true, but that leaves many regions unequipped. Will not those of you who come from the other counties see that the service is provided for the mothers under your care? It must be remembered, too, that even when the service has been provided, it will not be effective unless the underprivileged mothers know that it is available. Just as the public must repeatedly be told of the usefulness and availability of typhoid vaccination and tuberculosis examinations, so must they be informed of this new medical service.

You are in a strategic position to relieve the mothers under your care of the monthly fear of undesired pregnancy, to improve North Carolina's next generation by correcting the present undesirable differential birth rate, and to assure to each child an adequate physical and psychological birthright. It is, therefore, my hope that you will do your very important part to make "Every North Carolina Child a Wanted Child."

REFERENCES

[1] In June 1938, 46 counties were so equipped.
[2] Gamble, Clarence J. and Beebe, Gilbert W., "The Clinical Effectiveness of Lactic Acid Jelly as a Contraceptive." American Journal of the Medical Sciences, July 1937, Vol. 194, pp. 79-84.
[3] Dewees, Lovett, and Beebe, Gilbert W., "Contraception in Private Practice—A Twelve-year Experience." The Journal of the American Medical Association, April 9, 1938, Vol. 110, pp. 1169-1172.
[4] DeVilbiss, Lydia Allen, "The Contraceptive Effectiveness of the Foam-Powder and Sponge Method." The Journal of Contraception, Jan. 1938, Vol. 3, pp. 7-10.

PRESIDENT FOSTER: I will ask Dr. J. Allen Whitaker to open the discussion on Dr. Gamble's paper.

Dr. Whitaker doesn't seem to be present.

We would like to have this paper thoroughly discussed. This is an important problem that we have with us. Who will volunteer to discuss Dr. Gamble's paper?

Dr. Norton, wouldn't you like to say a word?

DR. ROY NORTON (Raleigh): I am looking for Dr. Rosenau. I would like to hear from him first if he is here.

Mr. President, Ladies, and Gentlemen: I just want to mention two aspects of this problem that make me very much in favor of it, that is, contraceptive health education in North Carolina, one going back to the historical aspect of it that Dr. Gamble referred to: Every nation that we have any history of that I can find anything about, have used some method to limit their population when they wanted to. The earliest method, of course, was infanticide, and just as it is true that in religion we have every gradation and every step that we have gone through in the history of the race, we still have these methods that have been used during all the ages. The first method of infanticide is still being used in North Carolina. Every health officer who is observant and studies his death certificates, knows it is a fact. We are still having a whole lot of unwanted babies killed. They are killed sometimes by not giving them the proper diet.

We have three times as many illegitimate children dying, according to the proportion of births, as we have legitimate. That is part of the infanticide, some of it a quick way, and some of it a slow way.

The second method of infanticide that was used was abortion, and we are still having hundreds of thousands of abortions in the United States, a good many thousands in North Carolina every year. That is the second method that has been used and is still being used.

Dr. Gamble referred to the high maternal mortality where abortions

are used. An interesting fact in abortions is that at first glance most of us have thought that abortions have occurred in unmarried women mostly. But careful studies have shown that the great majority of abortions in the whole population have occurred in women who are married and who have given birth to five or more children. That is a fact to which we have not opened our eyes sufficiently.

The third method of looking at the control of population is contraception. Of course, that corresponds to the history of medicine in every way. We have gone about it in a strictly curative method first. Later on we have looked at the thing in a preventive way, and tried to do something about it before more damage was done.

I think from that standpoint, certainly, that we need to open our minds, need to get health education across to others, and not be so reticent or have so much false modesty about the whole question.

A second consideration is the question of what type of individuals are being born, and what effect would contraceptive information have on the type of individuals that we expect in our next generation. I think that when we consider that, and consider the fact that the birth rate is over 50 per cent higher among the poverty-stricken, and among those who are unable to support them — even those on relief, 50 per cent of those absolutely on relief — than those in the higher level, and when we look at the matter frankly, we have to admit that a good many young people who are of our best blood, of our healthiest stock, postpone marriage, and postpone having children because of the heavy load that we have of taking care of those who are less desirable. If we could reduce the load of unwanted children we could increase the number of wanted children in this state.

A third consideration that I would like to refer to is the fact that apparently a method has been developed that can be used in the type of population in which heretofore it has not been found feasible or adaptable to. In other words, this sponge and foam powder method does not require a special fitting. It does not require a highly educated and a conscientious person to carry it out, and therefore it can be used in the groups in which we would like to limit the population.

I have thoroughly enjoyed Dr. Gamble's discussion of this very important subject, and I think that we are making a good bit of progress in this state along this line. (Applause.)

President Foster: Is there any further discussion?

If not, we will ask Dr. Gamble to close.

Dr. Gamble: I don't think there is anything to add, except one thing: Your State Board of Health with its courageous stand a year ago is not only helping North Carolinians. Two other states, encouraged by the example of North Carolina, have in a very hesitating way started the same program under their state boards of health. They are

still in the stage where they do not want publicity, so I am not naming them in public, but you will hear of them before long.

We believe that that same example will extend to other states, and therefore eventually North Carolina will be doing its part for wanted children all through the United States. (Applause.)

President Foster: Our time is very short. It is now 5:30. Our dinner meeting is at 6:30. As I said once before, the tickets are on sale for $2.00 each. We want everybody to be there. Before you adjourn, we would like to have reports of the committees that are to be made before the dinner recess.

The Chairman of the Committee on Resolutions: Are you ready to make your report? (The Chairman was not ready to make the report.)

How about the Nominating Committee?

Dr. Romulus L. Carlton (Winston-Salem): We are ready to report. Do you want that report now?

President Foster: Yes, sir.

Dr. Carlton: Mr. President, your Nominating Committee reports as follows: For President, Dr. J. A. Morris; Vice President, Dr. A. H. Elliott; for Secretary, Dr. Roy Norton.

President Foster: You have heard the report of the Nominating Committee. Does anyone wish to make a nomination from the floor?

It was duly moved and seconded that the report of the Nominating Committee be accepted.

President Foster: All in favor of that, let it be known by saying, "Aye"; opposed, "No." It is so ordered.

According to that, the Committee's nominations stand, because no others have been made.

We will adjourn until 6:30. The meeting tonight will begin promptly at 6:30.

Whereupon the session adjourned at 5:20 o'clock.

The meeting convened at 8:00 o'clock, President Foster presiding.

President Foster: At this time we would like to have the reports of the various committees that were appointed this morning. We would like to hear from the Committee on the President's Address. The chairman, I believe, is N. Thomas Ennett.

Dr. Ennett: Mr. President, I will say for the Committee that we reviewed the President's address, found his address in keeping with the best traditions of the Society, and it was the unanimous vote of the Committee that it be placed in the Transactions of the Association. The President's address we thought was worthy of being published in the Transactions, and the Committee so moved. (Applause.)

President Foster: Thank you, Dr. Ennett.

The Committee on Resolutions, Dr. Mosely.

Dr. Mosely: Mr. President, your Committee wishes to make the following report: We wish to express the appreciation of the Association to the officers for the excellent program of this meeting, and to the hotel management for providing adequate facilities for holding our meeting.

Second, we encourage closer coöperation among the public health workers, medical groups, and the public schools, to the end that we may cut down the lag between the acquisition, and the application of medical knowledge. For example, we refer to the slow progress in the control of tuberculosis, syphilis, diphtheria, typhoid, and pneumonia.

Third, we recommend that all business matters of the Society be completed during the morning and afternoon sessions, leaving the evening session for the dinner, the President's address, and the featured guest speaker.

Fourth, we further wish to recommend that a committeee of three be appointed by the President to work with a like committee to be appointed by the State Medical Society and the State Pharmaceutical Society to study and make recommendations looking forward to supplying better information to the public regarding the dangers of commercial radio and newspaper advertising of drugs, resulting in their widespread promiscuous use. This group could also investigate the wide difference in the cost of some of the drugs when purchased with or without a physician's prescription.

Fifth, we recommend that the officers of this Association serve as a committee to aid in bringing about the passage of a better marriage law in which shall be the requirement of a negative Wassermann test for both parties.

Respectfully submitted by Dr. A. C. Bulla, Dr. Roy Norton, and Dr. Z. V. Mosely.

President Johnson: You have heard the recommendations of the Committee on Resolutions. Is there any discussion or recommendation pertaining to these resolutions?

Dr. McGehee: I move they be adopted.

The motion was duly seconded.

President Foster: It has been moved and seconded that these resolutions be adopted. All in favor of that let it be known by saying "Aye"; all opposed, "No." The resolutions are adopted.

We have one other committee — this committee has been appointed for some time — pertaining to the old age income under the Social Security Act. This committee is headed by Dr. C. C. Hudson, Chairman. I wonder if he is ready to report tonight?

Dr. C. C. Hudson: Mr. Chairman, this Committee has had one meeting. We have been studying this particular problem. Since our meet-

ing this problem has come up with the state employees as an organization. I think that we should continue our Committee and coöperate with this state organization which has been formed.

Mr. A. L. Fletcher, Commissioner of Labor, announced the appointment of various subcommittees. I understand that Dr. Knox is on the Board of this organization, and that Mr. Booker is a member of it. They have several subcommittees in connection with state employees and state teachers organizations.

They have, for instance, a Committee on State and Federal Legislation, a Committee on School Coördination, a Committee on the Operation and Control of a Pension System, and a Committee on the Framing and Enacting of the Legislation.

Mr. Deiner, Secretary of State, is chairman of the Committee on Framing and Enactment.

It would seem to me that we should have a committee, and that we should see if it is possible for us to unite all our local organizations into this state system, which it is proposed to adopt. I would suggest that the committee be continued, and that we should certainly have Dr. Knox and Mr. Booker on that committee.

President Foster: I will add to this committee Dr. J. C. Knox and Mr. Warren H. Booker, and will be glad for this committee to be extended. This will be taken up again at a later date.

At this time I will ask Dr. Milton J. Rosenau to introduce our speaker of the evening.

Dr. Rosenau!

Dr. Milton J. Rosenau: Mr. President, My Friends: I told Dr. Foster when he asked me to do this that he was taking a chance. Well, we all have to take a chance in this world.

In fact, the laws of probability are simply matters of chance in the world of physicis, and that applies also in the world of physics of which we are a biologic part in our public health work. In other words, when we deal with a communicable infection, we run two chances: We either get it or we don't. (Laughter.) If we get it, we either recover or we die. We still have two chances. If we die, we still have two chances. (Laughter.)

It is always well to know something of the background of the guest speaker, especially when he is a distinguished star, such as we have the honor to have tonight. Personally, it is a pleasure and, officially, a privilege to present Dr. Smillie.

In brief, Dr. Smillie, in the first place, came from Colorado. He attended the Harvard Medical School. From the Harvard Medical School he went to the Peter Brigham Hospital for two years for his internship, where he is still loved and cherished for his work and the impressions that he made.

After he left the hospital he came to the School of Public Health, and was one of the first in this country to get the degree of Doctor of Public Health. He stayed in that institution for two years. He then tried his wings and went out into the world. He entered the International Health Board of the Rockefeller Foundation.

During his various periods of work on many tropical diseases — malaria, hookworm, yellow fever, and whatnot — here, there, and elsewhere, his contributions advanced every subject that he touched, and in recognition of his work and the scientific contributions that he made, Harvard invited him to take the Chair of Public Health Administration, which he accepted. While in that position, he wrote a book on public health administration which is now a classic, and is used in every school of public health not only in this country but abroad.

He remained in the Chair at Harvard until last year, when he was enticed by the Cornell University Medical School to come there and teach his first love — that is, preventive medicine and hygiene — to the medical students in that school.

I can't tell you all the things that Dr. Smillie did because we have to give him some time to tell his own story, but I do want to say that he especially made studies in the epidemiology of common colds, influenza, and pneumonia, and has advanced our knowledge of the epidemiology of those infections more than everybody else all put together up to the time when his master hand grasped some of the intricacies, solved the difficulties, and gave us a more accurate picture of what goes on in these diseases. In fact, his writings on those subjects sound like romance, and they are intriguing and exciting stories.

Dr. Smillie says he is getting embarrassed. He may well do so. That is the way it is with modest men, you know. They don't like to hear about their achievements and their successes. But Dr. Smillie is what we call—if you know what I mean—a dirt epidemiologist. When you speak of a dirt farmer you mean a real farmer, and a dirt gardener, like myself, is one who really gets down with his fingers into the dirt. He is that kind of an epidemiologist. He does not sit at a desk and work out the story from figures and whatnot; he has worked not only in the field but in the laboratory, from the statistical side, from the historic side, and from every other standpoint.

Dr. Smillie, when he was in Massachusetts for so many years, connected with Harvard, was President of the Board of Health of Newton, and regenerated the health work of the Newtonians at that point.

He was the health officer of a county in Alabama. I can never remember the name of that county. What was it?

Dr. Smillie: Covington County, Andalusia.

Dr. Rosenau: Andalusia, that is it. There he established a model, to which health officers from all over the world came to see how to do it. He

had a demonstration there which became known over the world. The Rockefeller Foundation brought over health officers and those teaching health abroad, brought them to this country, and one of the points of interest that they always sought was Dr. Smillie's work in Covington County, in Alabama, in Andalusia.

He did health work in Davidson, in our own state, so that we can claim him as one of our own. I don't know whether he is going to tell us about it or not, but don't let him get away without telling you the romantic story of how he studied common colds in the Virgin Islands, of all places (laughter), and in Spitzbergen, the most northerly, the coldest, the chilliest place in the world — how common colds come and go there. Then these epidemics of pneumonia which he checked recently—are you going to tell about that?

Dr. Smillie: I won't get that far.

Dr. Rosenau: Don't let him go until he tells these stories about his work on common colds, influenza, and pneumonia. It will be intriguing, and I am sure that you will be well repaid for waiting and listening.

We are now going to hear from Dr. Smillie on "The Epidemiology of Acute Respiratory Infections." (Applause.)

THE EPIDEMIOLOGY OF ACUTE RESPIRATORY INFECTIONS

Wilson G. Smillie, M.D.

Mr. Chairman, Dr. Rosenau, Ladies, and Gentlemen: I greatly appreciate the kind introduction that Dr. Rosenau gave me. Everything I know in public health I learned from Dr. Rosenau, so all these nice things he said about me are a reflection of his own accomplishment, because he told me what to do, and I did it.

It is like coming home, coming back to North Carolina. My field work in public health began in Lexington, North Carolina, in 1916. That was only a short time ago, but, as I look around, I see that practically all those who were working in the State Health Department at that time are no longer in the organization. Only one is left and that is Dr. Cooper. (Applause.) Dr. Cooper was in the Health Department then and he is right here in the Health Department today, after long years of faithful, effective service.

It is said to be a sign of old age when one begins to reminisce, but one can't help but reminisce when he comes back to an organization of this sort after having been away for years. To epitomize the changes that have occurred in the public health organization in both activity and interest during the past few years, one need only turn to the program as we have had it today. What things that were discussed today

would have been of interest or applicable to a meeting of this sort, for the health workers of the state, in 1916?

The first thing this morning, you remember, we talked about rabies. We had rabies in 1916, but we didn't have the methods of control we have now. The next paper was on tuberculosis. We had hardly started in our methods of control at that time as compared with the methods that are used today; so that that paper would have been entirely lost in 1916.

The next paper, you remember, was on sanitation. We were interested in sanitation in 1916. We spent practically all our time in the construction of sanitary toilets. But we hadn't dreamed of such things as trailers. If we had, there were no roads for them to use to menace our communities.

Sulfanilamide, of course, had not even been thought of in 1916.

Let us consider this afternoon's program:

Contraception wasn't considered seriously in 1916. We didn't have a venereal disease program in 1916. Serum treatment of pneumonia wasn't even thought of at the time. Public health nurses — we were just beginning to have public health nurses in 1916. The Division of Child Health wasn't even established.

Thus we have come a long way in those years. The State of North Carolina has advanced rapidly and effectively in its public health program. It is a pleasure to reminisce over these years of rapid advancement and fruitful achievement.

Tonight, I have been asked to discuss the epidemiology of acute respiratory infections. I shall limit myself to one small phase of that field, namely, a field study of the common cold.

When we started this study it was obvious that one of the first things that had to be done was to determine whether or not colds were "catching," or whether colds were due to environmental factors.

A great deal of study had been done upon the cause of the common cold. Cultures had been taken of the noses and throats of many people through the winter, over a period of years, to try to see if some common infectious agent might be discovered to be the primary or essential cause of colds. Because it was obvious that if colds were infectious there must be some infection, and if there was some infection we ought to be able to find what it was.

The other school of thought on colds was that colds were not due to a common infection, but were due to some change in bodily make-up, due to environmental influence, which so changed our resistance that the normal organisms present in our nose and throat were able to establish themselves and produce an infection. In other words, that was the group who believed that a draft blowing on the back of your neck, or getting wet feet, or any of these other things — exhaustion, fatigue, etc.— might influence an individual so that he developed a cold.

It would seem fairly easy in a community of this sort, let us say, to decide whether or not, when you developed a cold, the cold had been "caught," or whether you became ill because of exposure. But how is it possible to determine whether and where you caught a cold? Each one of us in the course of twenty-four or thirty-six hours is in contact with many different people. Furthermore, we are exposed to many environmental factors. At the moment, for example, we are exposed to almost tropical conditions, but before the night is over, we will be exposed to rather cool conditions. As a matter of fact, during the wintertime especially, we suffer from all sorts of exposure in the course of twenty-four hours.

In other words, in a normal, complex life such as we live, we have so many contacts in the course of a day, and we suffer so many exposures, and so many various environmental factors, that it is impossible to say what the cause of our cold is when we develop it.

Man, except for the higher primates, is the only animal susceptible to the common cold. So any study made on colds had to be made upon man. You can't treat man like a guinea pig. It was impossible to put a group of men in a cage and submit them to guinea pig procedures. Therefore, it was necessary to pick out a place where all the factors which make a scientific experiment possible were already well organized. It was necessary to go to an isolated community where we knew all the contacts of everybody in the community during a long period of time, and also where we could measure the environmental factors which influenced man in these areas.

We looked all over the United States. We went to the mountains of Kentucky and Tennessee. We thought we would find isolation in the Ozarks, but none of these places were sufficiently isolated.

Finally, more or less in desperation, we settled on the Patsaliga River —it is in the long leaf, sandy, coastal section of Alabama—in a community called Happy Hollow. Here the people were fairly well isolated. The men went to town once a month, usually to sell their produce. The women went to town once a year, always at court time.

Here we established a field laboratory. They thought we were interested in other things than bacteria, and were not hospitable at first. When they found we were there to do good and not harm they became friendly.

We established our base in the little country school. We took throat cultures from all the children that attended the school. After we won the friendship of the people, we got throat cultures of the normal individuals living out in the homes.

What was necessary, of course, was to determine a base line; to find out the bacteria that are normally harbored in the nose and throat, hoping that sooner or later somebody would get a cold, and we would

be able to trace the changes that would occur down through the community. We made no progress all fall and winter, and we thought we were going to go through the whole year without any colds. Then the teacher went out to a teachers' meeting at the county seat. She caught a cold. She brought it back and we got the cultures from her throat.

We saw this cold spread. It first infected the children who sat in the front row directly in front of the teacher, and then in radiating circles, until all the children had colds. From these it was taken out to the homes in concentric circles until every home in the community was infected.

We made cultures on the throats of everybody, to see if we could find the source of that infection, and we failed. We found a lot of interesting things, though. We found that the bacteria of the nose and throat did not increase in the early stages of the cold but, on the contrary, diminished. We found, also, on the third or fourth day of a cold that the pneumococcus began to appear in enormous numbers in the throats. We learned that an individual who had a cold, if he exposed himself on the third or fourth day of the cold to unfavorable environmental conditions frequently developed pneumonia. A little girl, for example, came to school with a cold in the third or fourth day, barefooted and bareheaded. She had nothing on but a gingham dress. She was about ten years of age. A cold, disagreeable rain came up in the afternoon, and she ran home, about three miles, through the rain. She promptly developed a chill and in three hours had a typical lobar pneumonia. We felt quite sure that if she had not had this cold, if the pneumococcus had not been so prevalent in her throat, that exposure would not have resulted in pneumonia. But that exposure, plus the cold, produced pneumonia.

Mr. G., the sheriff, was another example of this fact. He caught cold, was in bed three or four days, and was just about ready to get up and go about his business. We found the pneumococcus had become highly prevalent in his throat during these four days. He was getting well and there was no reason to think he would develop pneumonia.

He received a letter that day saying there was a still down in the woods about twenty-five miles away. The sheriff and his deputies went to the wood on this cold, disagreeable day, and chased the moonshiners across the fields and through the woods.

Mr. G. became exhausted. He had just gotten up from a sick bed. So lay on the ground, which was cold and wet, and waited for the others to get back. Three hours later he had a chill, and developed a typical lobar pneumonia.

In other words, we were able to establish fairly definitely that a person with a cold, especially in the third or fourth day, should take care of himself. About the period in a cold when most people decide to go back

to work is the time that the victim should exercise the greatest care, because during that period, if one suffers from exposure, fatigue, or exhaustion, pneumonia may result.

We did not find the cause of a cold in South Alabama. We did find out how to carry on an experiment of this sort, and we decided to go to a community which was really isolated, and where the people were subjected to severe environmental conditions. We went to Labrador.

Labrador is shut off from contact with the world during the winter because of the ice. We went to St. Johns, the capital of Newfoundland, early in the spring, waiting for a chance to get North through the ice.

At last we took a small ship as far as St. Anthony, which is the site of Dr. Grenfell's base hospital. That was as far as the steamer went. We were stuck there, and we had to wait until a two-masted schooner came along.

We finally got down to Lake Melville, and took a little ketch that went up inland among the headwaters of Lake Melville, at the mouth of the Hamilton River. A settlement was established there by the Hudson's Bay Company for the Indians over 200 years ago. It is still a trading post for the Indians, and there is the last migratory tribe of Indians on this continent.

We spent the summer there. There were 173 trappers, two or three missionaries, the fur trader, and ourselves. We studied the nasal and pharyngeal cultures of these people. They had interesting stories to tell. It seems they never have colds in the winter. No matter how cold the weather might be they would go through the winter without colds.

The previous winter, however, they had had a severe outbreak, and several of them had died. The story was as follows: The government thought it would be a nice thing to send them a Christmas mail by dog team. It so happened that at the time there was an epidemic of influenza raging in Quebec, and this epidemic was transmitted up the coast by the mail carriers.

The people at the Hudson's Bay post knew the mail was coming, and of course they were very anxious to get it. The dog driver went down to the coast alone, with his dog team, to pick up the mail. When he got there he found all the people were sick in bed. He knew he would get whatever it was and probably be greatly delayed to the disappointment of the people at home. Thus, without waiting to rest, he loaded on the mail sacks and started his dog team home. He got through the first day without any trouble. He camped that night and felt perfectly well. The next afternoon, at 3:00 o'clock, the infection struck. He was about thirty miles from home. He lashed himself to the sled and the dogs took him home.

The first man who caught the infection was the one who lifted him from the dog sled. Then the disease spread in concentric circles and invaded every home in the settlement.

There, we have the story of an acute infection undoubtedly invading that community from an outside source, a single source. We know the incubation period, which was between twenty-four and thirty-six hours. Inasmuch as a single infection invaded the community one would anticipate that everybody would be affected alike. Their anticipation was not realized. Some of the victims were only mildly sick, and didn't even go to bed. Others were in bed for a week or more. A few were very sick indeed. In other words, the epidemic embraced all variations of acute respiratory infection, from a mild cold to severe influenza and pneumonia.

We made cultures of the Indians and the other people in the community, and did a lot of interesting things. But we didn't find the cause of colds. It seemed advisable to make the next study in a community that was completely isolated, but where the environmental conditions were favorable. A spot of that sort, of course, must be in the tropics.

We finally settled on Stevenson's Treasure Island, St. John, which had a population of 243 Negroes and three whites.

We established our laboratory there and spent a year on the island of St. John.

We kept a record of the rainfall, the sunshine, the wind velocity, and the temperature. The temperature difference between the hottest day in summer and the coldest day in winter was only ten degrees.

The wind always blew in the same direction. We could depend upon sunshine every day, and almost always a rain. One would say that under those conditions people couldn't catch cold, but nevertheless they had colds.

We received our mail every two weeks.

A captain from St. John, with two assistants, sailed the boat. One day they went to St. Thomas and brought back colds. The first people to get infected were the family of the captain of the mail boat, and then the disease passed around to the various families in the settlement of Cruz Bay.

The infection spread up over the hills until practically every family on the whole island was invaded. Here again one would anticipate it would be possible to find some single infectious agent of the disease, because it could be clearly seen that this was an infection, transferred from person to person, by direct contact, and through definite incubation periods. Yet we were unsuccessful.

We did discover one interesting thing, namely, that these people in the tropics suffered from what one would call a simple cold. In other words, they would become ill with a cold as we do, and would be just as sick, or sicker than we are, with this initial infection, with high temperature and prostration. At the end of the week, however, the patient was perfectly well, with none of the complications which so frequently follow colds in the temperate zone.

In other words, a simple cold is a self-limited disease which lasts approximately a week, and the thing we suffer from in the temperate zone is not the simple cold, but the secondary invaders that establish themselves on top of a cold. We found in the tropics, quite contrary to our experience in this country, that the tropical people had few or none of these secondary invaders in the pharynx: which cause so much trouble during the winter in the United States.

Thus the ill effects of colds, as we suffer from them in the temperate zone, at least, are not due directly to the cold itself. The cold is essentially a self-limiting disease which cures itself in approximately a week. But the severe effects from colds are due to the pneumococcus and the influenza bacillus, these secondary invaders that find the way prepared for them, and establish themselves, and producing sinusitis, infection of the middle ear of children, bronchitis and in some instances, the pneumonias.

We didn't find the cause of colds in St. John. We did learn, however, that the environmental factor was not important, that colds were essentially infectious, and were spread from person to person by direct contact, with a definite incubation period of approximately thirty-six hours.

We found also, in St. John, that a person who had a cold remained infectious for only a short period of time. The victim, although he may continue to cough, to feel badly, and perhaps have a fever, does not transmit his cold to others after the fourth day. In this latter stage of the disease he has a secondary infection, and the actual primary cause has disappeared from his throat.

In order to complete this picture it was necessary to carry out another experiment in a place where the people were subjected to severe environmental factors. The coldest permanent settlement in the world is on the island of Spitzbergen. It is inhabited by about 400 people, who spend the winter there working in a coal mine. The men live in barracks, which are overcrowded, and overheated. They go to their work across a glacier a mile and a half wide, where the wind blows at seventy miles an hour, and the temperature is thirty and forty degrees below zero. Here they work in the mine all day, and then go back to the crowded hot barracks where they spend the night.

Although these miners were subjected to terrific environmental conditions, with the darkness that shut down in November and with no more sunshine until February, nevertheless they didn't have colds. The reason was, of course, that they were cut off entirely by the ice from contact with the outside world. The last ship left for Norway on the 26th of September, and from then on there was no contact at all with the outside world until the following June.

The people were strong and healthy. They had no colds. They had no bronchitis, no pneumonia, none of the infections so common with us in the wintertime. Spring came and still there were no colds. A bacterial

analysis of the nose and throat, carried out in serial cultures gave normal results—just the sort of thing you would expect to find in normal throats.

On the 26th of June the first ship came from Norway. The first person to catch cold was the man who took the mail bags off the ship. Soon the epidemic struck the community, and everybody went to bed.

A definite infectious agent invaded that community, spreading by personal contact, with an incubation period of thirty-six hours. Thus it was strong evidence that colds are not due to environmental factors, and that they are not due to exposure, but are due to an infectious agent.

During their field studies, Dr. Dochez was working along another line of attack. Since so many scientists had worked so hard in trying to find the cause of colds among the various bacteria with which we were familiar and had failed, he decided to determine whether or not colds might be due to a filterable virus. This was an encouraging lead, since Dr. Foster, who had formerly worked with Dr. Rosenau, had developed indications that colds were due to a filterable virus.

Dr. Dochez first worked with chimpanzees, He proved that colds might be spread from a person to a chimpanzee, and that the cause of colds was a filterable virus.

This study was continued using human beings as subjects, and this work substantiated the early conclusions that colds are due to a filterable virus. Dr. Dochez has been able to grow the virus and to keep it alive for years in a test tube. He can produce a cold in a susceptible person at any itme.

This was the complete evidence that was necessary to show that colds are due to a specific infection.

Let us summarize now our present knowledge about colds. We know that a cold is an acute respiratory infection, due to a specific filterable virus, and this virus is transmitted from person to person by personal contact during the acute stages of a cold. An individual with a cold will transmit it to others even before the symptoms have developed in him. A person is infectious only a short period of time—three or four days — and then the virus disappears from the throat, even though the individual may still feel miserable.

The disease is a self-limiting disease, and under conditions found in the tropics, the victim is well in a few days. In this climate, however, the severe consequences of a cold are due to secondary invaders of the throat, that establish themselves in the favorable soil which was produced by the initial infection.

President Foster: I am sure we all enjoyed Dr. Smillie's talk. It has been both instructive and entertaining.

Dr. Smillie wrote me some time before he came down here. He wanted to know whether his talk should be entertaining and whatnot. I wrote

him and said I thought it should be instructive and something that we would all enjoy. And he has made not only an instructive address from a health standpoint, but also a completely and thoroughly enjoyable address.

Is there anything you would like to bring up?

SECRETARY ELLIOTT: No.

PRESIDENT FOSTER: Is there any new business that anybody wishes to bring up? Are there any announcements to be made? Does anyone wish to say anything pertaining to this organization?

If not, I will at this time turn the gavel over to Dr. Morris of Oxford, who is the incoming President for next year. (Applause.)

PRESIDENT-ELECT MORRIS: Ladies and Gentlemen: It is needless for me to say that I am very much pleased with the report of the Nominating Committee which did me the honor of presenting my name. I want to thank the members of that Committee and all of you who accepted the report. I do not know whether I will come up to your expectations or not. I am not puffed up by such a distinction, but I am stimulated to do the very best I can not to disappoint you.

We want to have another meeting such as we have had today. I have thoroughly enjoyed it. We want to thank you, Dr. Smillie, for your delineation of a question that is certainly interesting. It sounds like another Odyssey of another American physician. Everybody is so interested in that, I believe, that we will extend your information to the public. We will do our best to broadcast your findings. We were very much in earnest in following you in your mole activity in getting down to where the worm is. (Laughter.)

If there is no further business we want to thank all of the committees for their work, and we wish to say that we appreciate the interest which has been shown in the Health Officers Association. Many of you have contributed. Next year we hope you will contribute even more, because I do not feel that I am the equal of our retiring President.

If there are no announcements, and if there is no other business, we will stand adjourned until we receive announcements from the Secretary for next year's meeting.

The meeting thereupon adjourned at 9:15 o'clock.

ALPHABETICAL LIST OF FELLOWS FOR 1938 WITH POSTOFFICE ADDRESSES

Name	*Address*
*Abel, J. F., (Hon.)	Waynesville
Abernathy, Claude O., (Hon.) U	Raleigh
Abernathy, H. N., (Hon.)	Charlotte
Adams, Carlton N., I	Winston-Salem
Adams, Edw. E., I	Murphy
Adams, J. L., S	Asheville
*Adams, J. R., Pd	Charlotte
Ader, O. L., Gen	Walkertown
Albright, C. J	Whiteville
*Alexander, G. T., S	Thomasville
*Alexander, J. M	Charlotte
Alexander, Jas. R., (Hon.)	Charlotte
*Allan, William, I	Charlotte
*Allen, A. L., NP	Roxboro
*Allen, Chas. I., S	Wadesboro
*Allen, G. C	Lumberton
Allen, Jos. A., (Hon.) Gen.	New London
Allen, M. H., Gen	Cramerton
Allen, W. O	Hendersonville
*Allgood, R. A., Gen	Fayetteville
Alyea, Edwin P., U	Durham
Ambler, Arthur C., Anes	Asheville
*Anders, McT. G., (Hon.) Gen.	Gastonia
Anderson, Chas. A., (Hon.)	Burlington
*Anderson, C. Philip, PH	Durham
Anderson, R. S., S	Rocky Mount
Anderson, W. B., OALR	Durham
Anderson, Wade H., (Hon.), PH	Wilson
*Andrew, John M	Lexington
*Andrew, Lacey A., Jr., U	Durham
Anthony, W. A., Gen	Gastonia
Archer, Isaac J., (Hon.) T	Black Mountain
Armistead, D. V., I	Greenville
*Ashby, E. C., S	Mount Airy
*Ashby, J. W., Psychiatry	Raleigh
*Ashe, J. R., Pd	Charlotte
Ashford, Chas. Hall, Gen	New Bern
Ashworth, B. L., (Hon.)	Marion
*Ashworth, W. C., (Hon.), NP	Greensboro
*Avery, E. S., Gen	Winston-Salem
*Aycock, F. M., Gen	Princeton
Aydlett, H. T., (Hon.) Gen.	Greensboro
Aydlette, Joseph P., (Hon.)	Earl
*Ayers, J. S., Gen	Clinton
*Bacon, Harold Lyle	Bryson City
Baier, Geo. F., Jr	West Asheville
*Baker, Horace M., S	Lumberton
Baker, Lenox D., Orth	Durham
Baker, R. D., Path	Durham
*Baker, T. W	Charlotte
*Bandy, W. G	Lincolnton
*Banner, A. C., OALR	Greensboro
*Banner, Chas. W., (Hon.) ALR	Greensboro
*Barbee, G. S., Gen	Zebulon
Barbour, Edith Goodwin, Gen.	Morganton
*Bardin, R. M	Rockingham
*Barefoot, Graham B., Path. and R	Wilmington
Barker, Christopher S., Gen.	New Bern
*Barnes, Dempsey	Asheboro
Barnes, H. E	Hickory
*Barnes, J. T	Asheboro
Barnes, Tiffany	Asheboro
Barrett, H. P	Charlotte
Barrett, J. M., Gen	Greenville
Barrier, H. W., NP	Black Mountain
*Barron, A. A., I	Charlotte
*Basnight, Thos. G., (Hon.) Gen.	Stokes
*Battle, John T. J., (Hon.) Ins.	Greensboro
Battle, Margaret White, Ob.	Rocky Mount
Battle, N. P., S	Rocky Mount
Baxter, O. D	Charlotte
Beal, Seth M	Elkin
*Beal, L. G., (Hon.) NP	Black Mountain

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Beam, H. M.	Roxboro
Beam, R. S., OALR	Lumberton
Beasley, E. B., Gen.	Fountain
Beavers, J. W., Gen.	Kernersville
Beckwith, R. P., Gen.	Roanoke Rapids
Belk, George W., GU	Gastonia
Bell, A. E., (Hon.) Gen.	Mooresville
*Bell, G. E., Ob. and Pd.	Wilson
Bell, O. E.	Winton
Bell, S. A.	Cycle
Bellamy, Robert H., (Hon.), Gen.	Wilmington
*Belton, J. F., Gen.	Winston-Salem
Benbow, J. T., Gen.	Winston-Salem
Bennett, E. C.	Elizabethtown
Bennett, Jos. H., (Hon.), Gen.	Wadesboro
Bennett, W. L.	Burnsville
*Benson, N. O., U.	Lumberton
Benton, Geo. R., Jr.	Goldsboro
Benton, Wayne J., T.	Jamestown
Bernard, Holman	Pilot Mountain
Berryhill, W. R., I.	Chapel Hill
Best, D. E.	Goldsboro
Best, Henry B., (Hon.) Gen.	Wilson
*Bethune, A. C.	Raeford
Biggs, J. I.	Lumberton
Biggs, Montgomery H., (Hon.) S	Rutherfordton
Bigler, V. L., I.	Albemarle
*Billings, G. M., ALR	Morganton
*Bitting, Numa Duncan, S.	Durham
Bittinger, C. L., Gen.	Statesville
*Bittinger, S. M., T.	Black Mountain
Bizzell, M. E., OALR	Goldsboro
Bizzell, T. Malcolm	Goldsboro
Black, George Wm.	Charlotte
*Black, O. R.	Landis
Black, Paul A. L., Gen.	Wilmington
Blackshear, T. J., OALR	Wilson
*Blackwelder, Verne H., S.	Lenoir
*Blair, Andrew, I.	Charlotte
*Blair, J. L., Gen.	Gastonia
Blair, M. P., (Hon.)	Marshville
Blanchard, T. W.	Hobbsville
Bland, Charles A.	Forest City
Bliss, F. E.	Fletcher
Blue, A. McN.	Carthage
*Blue, Waylon, Gen.	Jonesboro
*Boice, E. S., S.	Rocky Mount
Bolt, C. A.	Marshville
Bolus, Michael, D.	Raleigh
Bond, F. B., Gen.	Southport
Boney, Elwood R., I.	Kinston
Bonner, J. B., Gen.	Aurora
*Bonner, K. P. B., (Hon.)	Morehead City
*Bonner, M. D.	Jamestown
*Bonner, O. B., OALR	High Point
*Booker, Edwin N., Gen.	Selma
Booker, J. P.	Lincolnton
*Boone, W. H., (Hon.) Gen.	Durham
*Boone, W. W., Gen.	Durham
*Bost, T. C., S.	Charlotte
Bostic, Wm. C., (Hon.)	Forest City
Bostic, W. C., Jr.	Forest City
Bowen, J. P.	Aberdeen
Bowers, M. A., Gen.	Winston-Salem
*Bowles, Francis N., Gen.	Durham
*Bowling, Edwin Holt, (Hon.)	Durham
Bowling, J. M., Gen.	Durham
*Bowman, E. L.	Lumberton
Brackett, W. E., OALR	Hendersonville
*Bradford, W. B.	Charlotte
*Bradford, W. Z., Ob.G.	Charlotte
Bradley, H. J.	Brevard
Bradshaw, T. G., Gen.	Wilson
*Bradsher, J. S., I.	Stovall
Brandon, W. O.	Concord
Brantley, Hassell, Gen.	Spring Hope
Brantley, J. C., Gen.	Spring Hope
Bray, T. L.	Plymouth
*Brenizer, A. G., S.	Charlotte
*Brewer, J. S., Gen.	Roseboro
Brewton, W. A., S.	Enka
*Bridger, D. H.	Bladenboro
*Bridges, D. T.	Lattimore
*Briggs, Henry H., Jr., ALR	Asheville
*Brinkley, H. M., Gen.	Durham
Bristow, C. O.	Rockingham
Britt, C. S.	Charlotte
Britt, J. N.	Lumberton
*Brockmann, Harry L., S.	High Point
Brooks, E. Bruce, I.	Winston-Salem
*Brooks, F. P., Gen.	Greenville
Brooks, H. E., Gen.	Clayton
*Brooks, R. E., U.	Burlington
*Brookshire, H. G., (Hon.)	Asheville
*Broun, M. S., OALR	Roanoke Rapids
Brown, C. E.	Salisbury

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Brown, C. R.	Goldsboro
Brown, F. B., Or.	Winston-Salem
*Brown, G. W., (Hon.)	Raeford
Brown, J. P., (Hon.)	Fairmont
*Brown, J. S., Sr., (Hon.)	Hendersonville
*Brown, J. S., Jr.	Hendersonville
Brown, Kermit E., Ob.G.	Asheville
*Brown, Landis G., S.	Smithfield
Brown, V. E.	Williamston
*Brown, W. M. B., ALR.	Greenville
Brownsberger, Ethel, Ob.	Biltmore
*Brownsberger, John F., S.	Fletcher
Brunson, E. P., S.	Albemarle
*Buchanan, L. T.	Laurinburg
Buckner, J. M.	Swannanoa
Buffalo, J. S., (Hon.) Gen.	Garner
*Bugg, C. R., Pd.	Raleigh
*Buie, R. M., PH.	Greensboro
*Bulla, A. C., PH.	Raleigh
*Bullitt, J. B., Path.	Chapel Hill
Bullock, Thomas C., (Hon.) Gen.	Autryville
*Bulluck, Ernest S., S.	Wilmington
Bunch, Charles	Charlotte
Bunn, J. H., PH.	Smithfield
Bunn, J. P., Gen.	Rocky Mount
Bunn, R. W., Gen.	Enfield
Burleson, W. P., Gen.	Plumtree
Burns, J. E.	Concord
Burt, B. W., (Hon.) Gen.	Holly Springs
Burt, S. P., (Hon.)	Louisburg
*Burwell, John C., Jr., Ob.G.	Greensboro
*Busby, G. F., S.	Salisbury
*Busby, Julian G.	Kannapolis
*Butler, Leroy J., Pd.	Winston-Salem
Butt, R. B.	Marion
Byerly, Andrew B., (Hon.)	Cooleemee
Byerly, J. H., Gen.	Sanford
Byrd, A. L.	Reidsville
*Byrnes, T. H., Path.	Durham
Caddell, G. C.	Hoffman
Callaway, J. Lamar, D.	Durham
*Campbell, Alton C., Gen.	Raleigh
Campbell, A. S., Gen.	Durham
Campbell, J. W., Gen.	Gastonia
Cannon, E. Gaine, Gen.	Hope Mills
Cardwell, D. W., Gen.	Greensboro
*Carlton, Romulus L., (Hon.) PH	Winston-Salem
Carmichael, T. W.	Rowland
*Carpenter, Coy C., Path.	Wake Forest
Carr, Ransom Lee	Rose Hill
*Carrington, G. L., S.	Burlington
Carrington, S. M., S.	Oxford
Carroll, F. W., Gen.	Hookerton
*Carter, Bayard, Ob.G.	Durham
Carter, P. C.	Madison
*Carter, W. D., PH.	Morganton
*Casstevens, J. C., Gen.	Clemmons
Casteen, Kenan, OALR.	Leaksville
Castelloe, Cola	Windsor
*Cathell, E. J.	Lexington
*Caviness, V. S., I.	Raleigh
Caviness, Zebulon M., (Hon.)	Raleigh
Cekada, Emil B., I.	Durham
Chaplin, S. C.	Columbia
Cheadle, C. M.	Burnsville
*Chester, P. J., OALR.	Southern Pines
*Chiles, George G., S.	Sanford
*Choate, A. B.	Charlotte
*Clark, Badie T., S.	Wilson
Clark, D. D.	Clarkton
Clark, E. S.	Clarkton
*Clark, H. S., S.	Asheville
Clay, E. L., I.	Oxford
*Clayton, M. B., OALR.	Statesville
Clement, Edward B., (Hon) OALR	Salisbury
Cloninger, K. L.	Conover
Clyatt, Claude Eugene	Denton
*Cobb, Donnell B., S.	Goldsboro
*Cobb, Wm. H., (Hon.)	Goldsboro
Cocke, C. H., T.	Asheville
Cocke, E. R.	Asheville
Cocke, Jere E., (Hon.)	Asheville
*Codington, H. A., S.	Wilmington
Colby, C. DeW., T.	Asheville
*Cole, Walter F., S.	Greensboro
Coleman, G. S., (Hon.), Pr.	Raleigh
Coleman, L. A., OALR.	Salisbury
Collins, Ruth M., Gen.	Greensboro
*Combs, Fielding, OALR	Winston-Salem
*Combs, Jos. J., Gen.	Raleigh
Cook, H. L., OALR.	Greensboro
*Cook, J. L., PH.	Winston-Salem
*Cook, W. E.	Mebane
*Cooke, G. C., S.	Winston-Salem

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Cooke, Q. H.	Rich Square
Cooper, A. Derwin, Allergy	Durham
*Cooper, G. M., (Hon.) PH	Raleigh
*Coppridge, W. M., U	Durham
*Corbett, Clarence Lee	Dunn
Corbett, J. P.	Swansboro
*Cornell, W. S.	Charlotte
Cornwell, A. M., S	Lincolnton
Corpening, O. J., (Hon.)	Granite Falls
Costner, W. V., Pd	Lincolnton
Couch, V. F., ALR, OALR	Winston-Salem
Covington, J. M. C., OALR	Roanoke Rapids
Cox, A. M.	Madison
Cox, G. S.	Tabor
Cox, S. C., Gen	Kerr
Cozart, S. R., I	Greensboro
Cozart, W. S., Gen	Fuquay Springs
Craddock, A. B., I	Asheville
*Craig, S. Douglas, Gen.	Winston-Salem
Cranford, J. F., GU	Gastonia
Cranmer, J. B., (Hon.), S	Wilmington
Cranz, Oscar W., S	Kinston
*Craven, Erle, Jr.	Lexington
*Craven, Jean	Lexington
Craven, Thomas W.	Huntersville
Craven, W. W.	Charlotte
Crawford, Robt. H., S	Rutherfordton
Crisp, S. M., Gen	Greenville
*Crispell, R. S., NP	Durham
Cromartie, R. S.	Elizabethtown
Croom, R. D., Jr.	Maxton
*Crouch, A. McR., Pd	Wilmington
Crouch, T. D., Gen	Stony Point
Crow, S. L., I	Asheville
Crowell, A. J., (Hon.) U	Charlotte
*Crowell, L. A., (Hon.) S	Lincolnton
*Crowell, L. A., Jr.	Lincolnton
*Crump, C. L., OALR	Asheville
Crump, Curtis, I	Asheville
Crumpler, A. G., Gen.	Fuquay Springs
Crumpler, James F., Pd.	Rocky Mount
*Crumpler, Paul, (Hon.) Gen	Clinton
Cummings, M. P.	Reidsville
*Currie, D. S., (Hon.) Gen	Parkton
*Cutchin, J. Henry, Gen	Whitakers
Dale, G. C.	Goldsboro
Daligny, Charles, (Hon.)	Troy
*Dalton, B. B., Gen	Liberty
Dalton, Wm. N., (Hon.), Gen.	Winston-Salem
Daniel, N. C., (Hon.), Pd	Oxford
*Daniels, O. C., OALR, (Hon.) Gen.	Oriental
*Darden, O. B.	Richmond, Va.
*Daughtridge, A. L., R	Rocky Mount
*Davidian, Vartan A., S	Smithfield
*Davidson, Jno. E. S., (Hon.)	Charlotte
*Davis, G. B.	Fairmont
*Davis, J. F.	Hemp
*Davis, J. M., Gen	Wadesboro
*Davis, Jas. W., S	Statesville
*Davis, P. B., Gen	High Point
Davis, Rachel D.	Kinston
Davis, Stephen W., (Deceased)	Charlotte
Davis, Thomas W., OALR, (Hon.)	Winston-Salem
Davison, Wilburt C., Pd	Durham
*Dawson, W. E., Gen	Hookerton
Deans, A. W., Gen	Battleboro
DeArmon, J. McC., (Hon.)	Charlotte
*DeCamp, Allen Ledyard, Ob.	Fayetteville
*Dees, D. A., OALR	Bayboro
Dees, R. E., Gen	Greensboro
*Dees, Rigdon O., (Hon.) Gen.	Greensboro
DeLaney, C. O., U	Winston-Salem
*Denholm, J. S., T	Sanatorium
*Dewar, William B., I	Raleigh
Deyton, John W.	Asheville
*Dick, Julius V., (Hon.), Gen.	Gibsonville
*Dickinson, E. T., (Hon.) ALR	Wilson
*Dickinson, K. L., Ob	Raleigh
*Dickson, M. S., Gen	Oakboro
*Dixon, G. G., Gen	Ayden
Dixon, Guy E., (Hon.)	Hendersonville
*Donnelly, Grant Lester	Chapel Hill
Donnelly, Jno., I	Charlotte
*Dougherty, J. H., U	Asheville
*Drummond, C. S., Proctology	Winston-Salem
*Duckett, V. H.	Canton

* Present at 1938 meeting at Pinehurst.

Name	*Address*
*Duffy, Charles, Gen.	New Bern
Dula, F. M., S.	Lenoir
*Duncan, S. A., Gen.	Benson
Dunlap, L. V., Gen.	Albemarle
*Dunn, R. B., Ob.G.	Greensboro
*Durham, C. W., Gen.	Greensboro
Eagle, J. C.	Spencer
*Eagle, Watt W., ALR	Durham
*Earle, J. B.	Siler City
*Eason, H. F., Ph.	Raleigh
Eason, J. A.	Williamston
Eaves, Rupert S.	Rutherfordton
Eckel, O. F., (Hon.) Anes.	Asheville
Edwards, A. M., Gen.	Taylorsville
*Edwards, B. O., T.	Asheville
Edwards, C. J., GU	Raleigh
Edwards, F. D.	Lawndale
Edwards, J. D., (Hon.)	Siler City
Edwards, V. E., Gen.	Stokesdale
Eldridge, Chas. P., Gen.	Raleigh
*Eldridge, Harvey A., Gen.	Benson
Elfman, Samuel L., Gen.	Fayetteville
*Elias, Lewis W., (Hon.) Pd.	Asheville
Eller, Albert J., (Hon.) PH	Wilkesboro
*Ellington, A. J., OALR	Burlington
Ellinwood, Everett H., Gen.	Snow Hill
*Elliott, A. H., PH	Wilmington
*Elliott, J. A., D.	Charlotte
*Elliott, J. C., S.	Oxford
*Elliott, W. F., OALR	Lincolnton
*Elliott, W. M.	Forest City
*Ennett, N. Thomas, PH	Greenville
*Ervin, John W., Gen.	Morganton
*Erwin, Evan A., A.	Lumberton
Evans, J. E., S.	Wilmington
*Everett, A. C., (Hon.)	Rockingham
*Faison, Elias	Charlotte
*Faison, Thos. G., PH	Winton
Fales, Robert, Gen.	Wilmington
Falls, Fred	Lawndale
*Farrington, R. K.	Thomasville
*Fassett, Burton W., OALR	Durham
Faulk, J. G., S.	Murphy
Fauntleroy, Jas. W.	Zirconia
Fay, Oliver F., Oph.	Wilmington
Fearing, Isaiah, (Hon.)	Elizabeth City
Fearington, J. C. P., I	Winston-Salem
*Felton, R. L., Jr.	Carthage
*Felts, Robt. L., (Hon.) Gen.	Durham
Fergus, Leroy, S.	Southport
*Ferguson, G. B.,	Durham
*Ferguson, R. T., G.	Charlotte
*Ferneyhough, W. T.	Reidsville
Fetner, L. M.	Lenoir
Fetzer, Paul W.	Reidsville
*Fields, Leonard E., Gen.	Chapel Hill
Fike, Ralph L., Gen.	Wilson
Finch, O. E., I.	Raleigh
Fink, Emma S., Gen.	Crossnore
Finklestein, Harold, S.	Durham
*Fitzgerald, Chas. E., Gen.	Walstonburg
*Fitzgerald, J. D., S.	Durham
*Fitzgerald, J. H., OALR	Sithfield
Flagge, Philip W., (Hon.) Gen.	High Point
Fleetwood, Jos. A.	Conway
Fleming, Frank R., Gen.	Statesville
Fleming, L. E.	Charlotte
*Fleming, M. I., R.	Rocky Mount
*Fleming, Ralph Gibson, Gen.	Durham
Fleming, Giles M.	Cleveland
Flippin, J. M., (Hon.)	Pilot Mountain
Flippin, Samuel T., (Hon.)	Siloam
Flowers, C. E., Gen.	Zebulon
Floyd, W. Russell	Kannapolis
*Flythe, W. H., Gen.	Norwood
Forbus, Wiley D., Path.	Durham
*Ford, D. E., PH	Washington
*FormyDuval, Thurston	Whiteville
Forrest, D. E., Gen.	Hillsboro
Fortescue, Wm. H.	Hendersonville
Fortune, Alex F., (Hon.) Gen.	Greensboro
*Foster, Glenn G., NMPsy.	Raleigh
Foster, H. H.	Norlina
*Foster, J. F., Gen.	Sanford
*Foster, M. T., PH	Fayetteville
*Fox, N. A., Gen.	Greensboro
*Fox, P. G., GU	Raleigh
*Fox, Robt. Eugene, PH	Raleigh
*Franklin, Ernest W., Ob.G.	Charlotte
*Frazier, J. W., U.	Salisbury
*Freeman, J. D., OALR	Wilmington
Freeman, R. H., S.	Raleigh
Freeman, Wm. T., (Hon.)	Biltmore

* Present at 1938 meeting at Pinehurst.

Name	Address
Fresh, W. M.	Hickory
Fritz, J. L.	Asheboro
Fritz, William A.	Hickory
*Frizzelle, M. T., (Hon.) Gen.	Ayden
*Frye, Glenn R., S.	Hickory
Fulghum, Jas. E.	Louisburg
*Furgurson, E. W.	Williamston
Futrell, L. M.	Murfreesboro
Gage, L. G., I.	Charlotte
Gallant, Robt. M.	Charlotte
*Gamble, J. R., S.	Lincolnton
*Gambrell, Grover C.	Lexington
Garber, J. Neill, Orth.	Gastonia
*Gardner, C. E., Jr., S.	Durham
*Garren, R. H., (Hon.)	Monroe
*Garrenton, Connell, Gen.	Bethel
*Garrett, F. B., OALR	Rockingham
*Garrison, R. B.	Hamlet
*Garris, F. H.	Lewiston
Garvey, Fred K., U.	Winston-Salem
Garvey, R. R., M.	Winston-Salem
*Gaskin, J. S., Gen.	Albemarle
*Gaskin, Lewis R., Gen.	Albemarle
*Gaskin, Madge B., Gen.	Albemarle
*Gaul, Jno. Stuart, Or.	Charlotte
*Gay, Charles H.	Charlotte
*Geddie, K. B., Pd.	High Point
Gentry, Geo. W.	Roxboro
*Gibbon, James W., S.	Charlotte
Gibbon, Robert L., (Hon.) S	Charlotte
Gibbs, E. W.	Shelby
Gibson, John S., (Hon.)	Gibson
Gibson, L. O., Gen.	Statesville
*Gibson, M. R., (Hon.) OALR	Raleigh
Gill, Jos. A.	Elizabeth City
Gillespie, S. C., I.	Asheville
Gilreath, Frank H., (Hon.)	North Wilkesboro
*Glascock, H. W., Jr., Gen.	Raleigh
Glascock, Joy H., (Hon.) Gen.	Greensboro
*Glenn, C. A., S.	Gastonia
Glenn, C. F., S.	Rutherfordton
Glenn, E. B., S.	Hiawassee Dam
Glenn, H. F., Jr., Gen.	Gastonia
*Glenn, Lucius N., (Hon.) S	Gastonia
*Godwin, G. C., T.	Sanatorium
*Gold, Ben	Shelby
Gold, Charles F.	Rutherfordton
Gold, T. B., ALR	Shelby
*Goley, Willard Coe	Graham
*Goode, T. V., S.	Statesville
Gooding, G. V.	Kenansville
Goodman, A. B., (Hon.)	Lenoir
*Goodwin, O. S., Gen.	Apex
Gorham, H. J., Gen.	Nashville
Goudelock, Jno. J.	Monroe
Goudge, Mabel E., Gen.	Durham
Gove, Anna M., (Hon.) Gen.	Greensboro
Grady, Jas. C., (Hon.) Gen.	Kenly
Grady, Wm. Earle, (Hon.)	Tryon
Graham, Charles, S.	Wilmington
*Graham, W. A., Ob.G.	Durham
Grantham, Wm. L., (Hon.) U	Asheville
Graves, Robert N.	Durham
Grayson, C. S., (Hon.) Gen.	High Point
Green, Wm. W., S.	Tarboro
Greene, Jos. B., ALR	Asheville
Greene, P. Y., Gen.	Apex
Greene, W. A.	Whiteville
*Greenwood, A. B., U.	Asheville
*Gregg, Albert D.	Henderson
Grier, Charles T.	Carthage
*Griffin, H. L.	Asheboro
*Griffin, H. W., OALR	Hickory
*Griffin, M. A., NP	Asheville
Griffin, W. R., NP	Asheville
*Griffith, F. W., G.	Asheville
*Griffith, L. M., OALR	Asheville
Grigg, John R., Gen.	Gastonia
Griggs, W. T., (Hon.)	Poplar Branch
*Grimes, W. L., S.	Winston-Salem
*Groves, R. B., Gen.	Lowell
*Haar, F. B., Pd.	Greenville
Hackler, R. H., R.	Washington
Hagaman, J. B.	Boone
Hagaman, L. D.	Boone
Halford, Jos. W., (Hon.)	Lillington
*Hall, W. D., ND Psy.	Raleigh
Hamblen, E. C., Ob.G.	Durham
Hambrick, Robt. T.	Hickory
Hamer, Douglas, Jr.	Lenoir
Hamer, W. A.	Charlotte
*Hamilton, John H., PH.	Raleigh
Hammond, A. F., Gen.	Grifton
Hamrick, Yates	Boiling Springs
*Hand, Edgar H.	Charlotte
Hanes, F. M., I.	Durham
Hansen-Pruss, O. C., I.	Durham

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Harbison, J. W., S.	Shelby
*Hardee, W. P., OALR	Durham
Harden, Boyd	Burlington
*Harden, Graham	Burlington
*Hardin, E. R.	Lumberton
Hardin, Parker C.	Monroe
Harding, S. A.	Mocksville
*Hardy, Ira M., (Hon.) OALR	Kinston
*Harmon, R. H.	Boone
*Harney, J. N., Pr.	High Point
*Harper, F. T., Jr., T.	Sanatorium
*Harper, J. H., (Hon). Gen.	Snow Hill
Harrell, L. J.	Goldsboro
Harrill, L. B., (Hon.)	Caroleen
Harrington, Carey I., T.	Oteen
Harrison, Edmund, (Hon.) Gen.	Greensboro
*Harrison, Edward T., Gen.	High Point
Harriss, Andrew H., (Hon.) Gen.	Wilmington
Harry, J. M., U.	Fayetteville
Hart, Deryl, S.	Durham
Hart, O. J., U.	Winston-Salem
*Hart, V. K., ALR	Charlotte
Harton, R. A., Gen.	Durham
*Harvey, W. W.	Greensboro
Hathcock, Thos. A., (Hon.) Gen.	Norwood
Hawes, J. D., ALR	Greenville
Haye, B. K., (Hon.) I.	Oxford
Hayes, A. H.	Fairmont
Hayes, R. B., Gen.	Hillsboro
*Haywood, C. L., Jr., S.	Elkin
*Haywood, Hubert B., Gen.	Raleigh
Head, W. T.	Melvin Hill
*Hedgepeth, E. M., Gen.	Roxboro
Hedgepeth, E. McG.	Chapel Hill
Hedgpeth, L. R., OALR	Lumberton
*Hedgpeth, W. Cary, Ob.	Lumberton
*Hedrick, C. R.	Lenoir
*Hege, J. Roy, PH.	Winston-Salem
*Helms, J. B., Gen.	Morganton
Helsabeck, B. A., Gen.	King
Helsabeck, R. S., Gen.	King
Henderson, C. C.	Mount Olive
Henderson, Irma C.	Asheville
Henderson, Jno. P.	Jacksonville
Henley, Ruth D., Ob.	Winston-Salem
*Henry, T. Boyce	Rockingham
*Hensley, Chas. A., I.	Asheville
Herbert, Fred L.	Andrews
Herbert, Wm. P., S.	Asheville
Herman, Chas. B., Gen.	Statesville
Herrin, H. K., Gen.	Gastonia
*Herring, E. H., S.	Raleigh
Herring, R. A., PH.	High Point
Hicks, Calvin S., (Hon.), Gen.	Durham
*Hicks, V. M., Oph.	Raleigh
Higginbotham, Upshur, Gen.	Roanoke Rapids
*Highsmith, Charles, (Hon.)	Dunn
Highsmith, J. D., S.	Fayetteville
*Highsmith, J. F., (Hon.)	Fayetteville
*Highsmith, J. F., Jr., S,	Fayetteville
*Highsmith, Seavy, (Hon.) Gen.	Fayetteville
Highsmith, W. C., Gen.	Fayetteville
*Hightower, Felda, Gen.	Raleigh
*Hill, A. L.	Kings Mountain
Hill, J. N.	Murphy
*Hill, M. D., Gen.	Raleigh
*Hill, Wm. I., (Hon.) Gen.	Albemarle
Hinnant, Milford, Gen.	Micro
*Hinson, Angus, S.	Statesville
*Hipp, Edw. R., S.	Charlotte
Hipps, A. G. T.	Asheville
*Hocutt, Battle A., (Hon.) Gen.	Clayton
Hodgin, H. H.	Red Springs
Hoggard, J. T., Gen.	Wilmington
*Holbrook, J. Samuel	Statesville
*Holladay, L. W., U.	High Point
Holleman, C. E., Anes.	Winston-Salem
Holloway, Joseph C., Gen.	Durham
Holloway, Robert Lee, (Hon.) Gen.	Durham
*Hollyday, W. M., OALR	Asheville
*Holmes, A. B.	Fairmont
Holt, D. W., I.	Greensboro
*Holt, Wm. P., (Hon.)	Erwin
Hooper, Jos. W., S.	Wilmington
*Hoover, C. H., (Hon.)	Crouse
Horton, M. C., OALR	Raleigh
Horton, W. C., (Hon.) Gen.,	Raleigh
Hoskins, H. D.	Elkin
Houck, Albert F., (Hon.) I.	Lenoir
Houser, E. A., (Hon.)	Shelby

* Present at 1938 meeting at Pinehurst.

Name	*Address*
*Houser, Forest M., Gen.	Cherryville
Houser, O. J.	Charlotte
*Hovis, L. W., (Hon.) OALR	Charlotte
Howard, C. E., R.	Goldsboro
*Howell, W. L.	Ellerbe
Howle, Eugene B.	Raleigh
Hubbard, Chas. C., (Hon.)	Farmer
Hubbard, Fred C., S.	N. Wilkesboro
*Hudson, C. C., PH	Greensboro
*Huffines, T. R., U.	Asheville
Hundley, Deane, Jr.	Wallace
Hunsucker, Chas. R.	Hickory
Hunt, J. F.	Spindale
Hunt, J. S., Pd.	Charlotte
Hunt, W. Bryce	Lexington
Hunter, J. P., Gen.	Cary
Hunter, W. B.	Lillington
*Hunter, W. C., Gen.	Wilson
*Hunter, W. Myers, (Hon.) Pd.	Charlotte
*Hurdle, S. W., Gen.	Winston-Salem
Huston, Jno. W., T.	Asheville
Hutchins, E. M., (Hon.)	North Wilkesboro
Hutchinson, S. S.	Bladenboro
Ingersoll, Louise M., Allergy	Asheville
Ingram, Chas. B., (Hon.)	Mount Gilead
Irwin, Henderson	Eureka
*Ivey, H. B., R.	Goldsboro
Ivey, R. R., USPHSS	Asheville
Jackson, M. V., Gen.	Princeton
Jacocks, W. P., PH	Delhi, India
James, Albert W., S.	Laurinburg
*James, Arthur A., Jr., Gen.	Sanford
*James, F. P.	Laurinburg
*James, W. D., S.	Hamlet
Jarman, F. G., S.	Roanoke Rapids
Jervey, A. J.	Tryon
Jewett, R. D., (Hon.) OALR	Wilmington
John, Peter, (Hon.)	Laurinburg
*Johnson, A. N., Gen.	Garland
Johnson, C. T.	Red Springs
Johnson, Edward J.	Cherokee
*Johnson, Floyd, PH	Whiteville
Johnson, G. F.	Winston-Salem
Johnson, Geo. W., Ob.G.	Wilmington
*Johnson, Harry L., S.	Hickory
Johnson, John B.	Old Fort
Johnson, Jos. L.	Graham
*Johnson, J. R.	Ramseur
Johnson, N. M., (Hon.) Gen.	Durham
*Johnson, Paul W., Ob.G.	Winston-Salem
*Johnson, Thos. C., (Hon.) S	Lumberton
Johnson, W. A.	Reidsville
Johnson, W. C.	Canton
*Johnson, Walter R., I.	Asheville
*Johnson, Wingate M., Gen.	Winston-Salem
Johnston, J. G., OALR	Charlotte
Johnston, Christopher, I.	Durham
Jonas, John F., (Hon.)	Marion
*Jones, Beverly N., OALR	Winston-Salem
*Jones, Carey C., Gen.	Apex
Jones, Catesby, Oph.	Asheville
*Jones, O. H.	Charlotte
Jones, R. Duval, (Hon.) S.	New Bern
*Jones, R. R., Jr. S.	Durham
*Jones, R. Rives, Gen.	Winston-Salem
Jones, T. Lester	Lansing
Jones, Thomas T., Gen.	Durham
Jones, W. M., Gen.	Gastonia
*Jones, Wm. M., (Hon.)	Greensboro
Jones, W. S., Gen.	Nashville
Joyner, P. W., Gen.	Enfield
*Judd, E. C., S.	Raleigh
*Judd, Glenn. B., S.	Varina
Judd, James M., (Hon.) Gen.	Varina
Justa, Samuel H., GU.	Macclesfield
Justice, Gaston B.	Marion
*Kafer, Oscar A., S and G.	New Bern
Keever, James W.	Hickory
*Keiger, James A., U.	Greensboro
Keiger, O. R., Gen.	Winston-Salem
*Keiter, W. E., Pd.	Kinston
*Keith, Marion Y., Pd.	Greensboro
Kelly, Luther W.	Charlotte
*Kendall, B. H.	Shelby
Kendall, John H.	Richlands
*Kennedy, John P., S.	Charlotte
Kent, Alfred A., (Hon.)	Winter Park, Fla.
Kent, Alfred A., Jr.	Granite Falls
*Kerns, T. C., OALR	Durham
Kerr, J. D., (deceased)	Clinton
*Kerr, Jas. E., (Hon.) Gen.	Winston-Salem

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Kibler, W. H.	Morganton
Killian, Frank M.	Franklin
*King, E. S., Bact.	Wake Forest
King, I. Campbell	Hendersonville
*King, Parks M., (Hon.)	Charlotte
*King, Richard M., (Hon.)	Concord
King, Robt. Rogers	Boone
Kinlaw, M. C.	Pembroke
Kinlaw, W. B., I	Kinston
Kinley, J. W., Psychiat.	Asheville
Kinsman, Henry F., (Hon.)	Hamlet
Kirby, Guy S., (Hon.)	Marion
*Kirby, W. L., D and R	Winston-Salem
*Kirk, W. R., (Hon.) I	Hendersonville
Kirkpatrick, W. L.	Waynesville
*Kitchin, Thurman D., (Hon.)	Wake Forest
Klutz, A. F.	Maiden
Knight, Floyd L., S	Sanford
Knight, H. W.	Bostic
*Knight, Wm. P., (Hon.) Gen.	Greensboro
Knowles, D. L., Gen.	Rocky Mount
*Knox, J. C., PH	Raleigh
*Koonce, Donald, S	Wilmington
Koonce, S. Everett, (Hon.) OALR	Wilmington
Kornegay, L. W., (Hon.) S	Rocky Mount
Kutscher, G. W., Jr., Pd.	Asheville
*Lackey, W. J.	Fallston
*Lafferty, Robt. H., (Hon.) R	Charlotte
Lamm, I. W., (Hon.)	Raleigh
Lancaster, N. F.	Waynesville
Lancaster, Wm. Jesse, S.	Wilmington
*Lane, Bessie, I	Raleigh
Lane, John D., OALR	Rocky Mount
*Lapsley, A. F., Gen.	Badin
Larkin, E. W., OALR	Washington
Lassiter, H. G., Gen.	Weldon
*Lassiter, V. C., S	Winston-Salem
*Laton, Jas. F., OALR	Albemarle
*Lattimore, E. B., (Hon.)	Shelby
*Lawrence, B. J., S	Raleigh
Lawson, G. W., Gen.	Chapel Hill
*Leath, McLean B., OALR	High Point
Le Bauer, Maurice L., S	Greensboro
Le Bauer, S. F., I	Greensboro
Ledbetter, Jas. M., (Hon.) OALR	Rockingham
*Lee, J. Marshall, Gen.	Newton Grove
Lee, Lawrence V., (Hon.)	Lattimore
*Lee, Mike	Kinston
*Lee, Thomas L., Ob.G.	Kinston
Leiby, G. M., PH	Bryson City
*Leinbach, Robt. F., I	Charlotte
Leonard, J. C., Jr.	Lexington
*Liles, L. C., Pd.	Raleigh
Lilly, Jas. M., (Hon.) ALR	Fayetteville
Lindberg, O. S.	Candler
Linville, A. Y., (Hon.) Gen.	Winston-Salem
Linville, W. C.	Goldsboro
Lister, J. L.	Jackson
Little, H. L., Gen.	Gibsonville
*Little, Lonnie M., Gen.	Statesville
*Liverman, J. S., Gen.	Winterville
*Livingston, E. A., OALR	Gibson
Logan, F. W. H.	Rutherfordton
Lohr, Dermot	Lexington
*London, Arthur Hill, Jr., Pd.	Durham
Long, Fred Y.	Catawba
Long, Glenn	Newton
Long, H. F., (Hon.) S	Statesville
Long, I. C.	Goldsboro
Long, L. L.	Laurel Springs
Long, R. H., NP	Morganton
Long, T. W.	Newton
*Long, T. W. M., Gen.	Roanoke Rapids
*Long, V. McK., (Hon.) U	Winston-Salem
Long, Wm. M.	Mocksville
*Long, Z. F.	Rockingham
Lord, Marjory J.	Montreat
Lore, Ralph	Lenoir
Lott, Wm. C., U	Asheville
*Love, Bedford E., (Hon.)	Roxboro
*Love, Wm. M.	Monroe
Lovelace, Thos. C.	Henrietta
Lovill, Robt. J.	Mount Airy
Lowery, E. F.	Raleigh
*Lowery, John R.	Salisbury
Lupton, C. C.	Burlington
*Lutterloh, I. Hayden, Jr.	Sanford
Lyday, C. E., Gen.	Gastonia
*Lyday, R. O., S	Greensboro

* Present at 1938 meeting at Pinehurst.

Name — *Address*

*Lynn, C. K. — Valdese
Lyon, B. R., S. — Greensboro
*MacConnell, John W., OALR — Davidson
MacFadyen, Paul R., (Hon.) — Concord
Mackie, Geo. C. — Wake Forest
*MacNider, Wm. deB., (Hon.) — Chapel Hill
MacRae, J. D., Jr., R. — Asheville
Maddry, M. Crocker, Gen. — Roanoke Rapids
Malloy, S. A., (Hon.) — Yanceyville
*Maness, A. K., Gen. — Greensboro
*Mangum, C. S. — Chapel Hill
*Mann, I. Thurman, Gen. — High Point
*Manning, I. H., (Hon.), Physiol. — Chapel Hill
Mariner, N. B., (Hon.) Gen. — Belhaven
Markham, Blackwell, S. — Durham
Marlowe, W. A., Gen. — Walstonburg
*Marr, M. W., I. — Pinehurst
Marsh, Frank B. — Salisbury
Marshall, J. F., S. — Winston-Salem
Martin, J. A., Pd. — Lumberton
Martin, J. F., OALR — Dunn
Martin, J. H., Gen. — Red Oak
*Martin, William F., S. — Charlotte
Martin, W. J. — Greensboro
*Massey, C. C., Pr. — Charlotte
*Matheson, J. Gaddy — Ahoskie
*Matheson, R. A. — Raeford
Mathews, Vann M. — Charlotte
Matros, Nathaniel H., S. — Oteen
Matthews, B. B. — Shelby
Matthews, Jas. O., (Hon.) Gen. — Clinton
*Matthews, M. L., (Hon.) OALR — Sanford
Matthews, W. S., Gen. — Bessemer City
Matthews, Wm. — Leaksville
Maulden, Paul R. — Kannapolis
May, Wm. P., Gen. — Winston-Salem
*Mayer, W. B. — Charlotte
*McAdams, C. R., Gen. — Belmont
*McAllister, Jean, Pd. — Greensboro
McAnally, Jas. McG., S. — Reidsville
McAnally, Wm. J., (Hon.) Gen. — High Point
McBane, T. W. — Pittsboro
*McBryde, Angus M., Pd. — Durham
*McCain, P. P., I. — Sanatorium

Name — *Address*

McCain, Walkup K., Gen. — High Point
McCain, Wm. R., (Hon.) Gen. — High Point
*McCall, A. C., OALR — Asheville
McCampbell, John, (Hon.) — Morganton
*McCants, C. H., S. — Winston-Salem
McChesney, W. W., Gen. — Gastonia
*McClees, E. C., Gen. — Elm City
*McClelland, Joseph O. — Maxton
McLelland, W. D., S. — Mooresville
McConnell, H. R., S. — Gastonia
McCotter, St. Elmo, Gen. — Bayboro
*McCoy, Thos. M., (Hon.) — Charlotte
McCracken, C. M., (Hon.) — Fairview
*McCracken, J. R., (Hon.) OALR — Waynesville
McCuiston, A. M. — Mount Olive
*McCutcheon, Frank, OALR — Salisbury
McCutcheon, W. B., S. — Durham
McDade, B. B. — Burlington
*McDonald, A. M., S. — Greensboro
McDonald, Lester B. — Hendersonville
McDowell, R. H., Gen. — Belmont
McDowell, W. K., Gen. — Scotland Neck
*McDuffie, W. N. — Hemp
McEachern, Duncan, S. — Wilmington
McElroy, J. L. — Marshall
*McElwee, Ross S., R. — Statesville
McFadyen, O. L., Gen. — Fayetteville
*McGeachey, R. S., (Hon.) PH — Weldon
McGee, J. M., Gen. — Greensboro
McGee, Robert L., S. — Raleigh
*McGehee, Jno. Wm., (Hon.) — Reidsville
*McGoogan, Benj. J., Gen. — Morven
McGrath, F. B. — Lumberton
McGuire, B. B., Gen. — Newland
McIntosh, D. M., (Hon.) — Old Fort
McIntyre, Stephen, S. — Lumberton
*McIver, Lynn, (Hon.) Gen. — Sanford
*McKay, Hamilton W., U. — Charlotte
*McKay, Jos. F., (Hon.) — Buies Creek
*McKay, Robert W., U. — Charlotte
McKay, W. P., ALR — Fayetteville
McKee, John S., Gen. — Raleigh
*McKee, John S., Jr., NP — Morganton
*McKee, Lewis M., Gen. — Durham

* Present at 1938 meeting at Pinehurst.

Name	*Address*
*McKenzie, B. W., S.	Salisbury
*McKenzie, W. N., PH.	Albemarle
*McKnight, R. B., S.	Charlotte
McLaughlin, C. S., (Hon.)	Charlotte
McLaughlin, C. S., Jr.	Charlotte
McLaughlin, J. E., (Hon.) Gen.	Statesville
McLean, Allen, NP.	Morganton
McLemore, Geo. A., (Hon.) Gen.	Smithfield
*McLeod, Alex H., (Hon.)	Aberdeen
McLeod, N. H., Gen.	Raleigh
*McLeod, Vida C.	Southern Pines
*McLeod, W. G.	Southern Pines
McLesky, J. H.	Charlotte
*McMillan, E. A., Gen.	Winston-Salem
*McMillan, R. D.	Red Springs
McMillan, R. L., I.	Winston-Salem
McNairy, Caroline	Lenoir
McNeil, Jas. H., I.	North Wilkesboro
*McPhail, L. D., (Hon.) Pr.	Charlotte
*McPheeters, S. B.	Goldsboro
*McPherson, C. W., OALR	Burlington
McPherson, S. D., (Hon.) OALR	Durham
Meadows, J. H.	Fairmont
Meadows, W. J., (Hon.) Gen.	Greensboro
Mears, George A., S.	Asheville
Mebane, W. C., (Hon.) U	Wilmington
*Mebane, W. C., Jr., Gen.	Wilmington
Menzies, H. C., (Hon.)	Hickory
Menzies, H. H.	Hickory
Meriwether, Benj. M., S.	Asheville
Merritt, John H., (Hon.)	Woodsdale
*Mewborn, J. M., Gen.	Farmville
*Mickley, Jack	Tabor City
Miles, Walter W.	Champion
*Milham, C. G.	Hamlet
Millander, Chas. W., S.	Asheville
Miller, Harry	Murphy
Miller, J. F.	Marion
Miller, Lila Bonner	Raleigh
Miller, O. L., Or.	Charlotte
*Miller, R. C., Gen.	Gastonia
Miller, Robert B., (Hon.)	Goldsboro
*Miller, W. Edwin, S.	Whiteville
*Milliken, J. S.	Southern Pines
Mitchell, G. T.	Wilkesboro
*Mitchell, Geo. W., Gen.	Wilson
Mitchell, Paul H., (Hon.)	Ahoskie
*Mitchell, R. C., S.	Mount Airy
*Mitchell, R. H., Gen.	Gastonia
*Mitchell, Z. P., PH.	Murphy
Mitchener, J. S., OALR	Raleigh
*Mock, Frank L.	Lexington
*Monk, Henry L., (Hon.)	Salisbury
*Monroe, C. R., S.	Pinehurst
*Montgomery, Harry M., (Hon.)	Burlington
*Montgomery, John C., Anes.	Charlotte
Moore, A. W.	Charlotte
*Moore, B. D., Gen.	Mount Holly
Moore, Chas. E., (Hon.)	Wilson
Moore, D. B., S.	Badin
Moore, D. F.	Shelby
*Moore, D. L., Gen.	Falkland
Moore, E. V.	Earl
*Moore, Henry B.	Graham
*Moore, Julian A., S.	Asheville
Moore, K. C., Gen.	Newton Grove
*Moore, Oren, Ob.G.	Charlotte
*Moore, R. A., Pd.	Charlotte
*Moore, R. A., Or.	Winston-Salem
Moore, Roy H.	Canton
*Moore, W. Houston, Ob.	Wilmington
*Morehead, Robt. P., Path.	Wake Forest
Morgan, B. E.	Asheville
Morgan, G. A., PH.	Asheville
*Morgan, W. G., Gen.	Chapel Hill
*Morris, Jos. A., (Hon.) PH.	Oxford
Morrow, W. C., U.	Andrews
Mosely, Chas. W., (Hon.) I	Greensboro
*Mosely, Z. V., PH.	Kinston
Moss, G. O.	Cliffside
Motley, Fred Elliott, ALR	Charlotte
*Mudgett, W. C., (Hon.)	Southern Pines
Mullen, M. P., Gen.	Wilson
*Munroe, H. Stokes, (Hon.)	Charlotte
*Munroe, J. P., (Hon.) I.	Charlotte
*Munt, H. F., Gen.	Winston-Salem
Murchison, D. R., I.	Wilmington
*Murphy, Gibbons W., R.	Asheville
*Murray, R. L.	Raeford
Myers, D. L., Gen.	Harmony
*Myers, John Q., (Hon.)	Charlotte

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Nalle, B. C., (Hon.) Ob.G.	Charlotte
*Nance, C. L.	Charlotte
Nash, J. Fred	St. Pauls
Neal, John W., (Hon.)	Monroe
Neal, Kemp P., S	Raleigh
*Neal, Paul N.	Raleigh
Neblett, H. C., Oph	Charlotte
Neece, K. E.	Monroe
Nelson, R. J., (Hon.)	Robersonville
Nelson, W. H., Gen	Clinton
Neville, C. H., Gen	Scotland Neck
Newcombe, A. P., Jr	Henderson
*Newell, H. A., (Hon.) OALR	Henderson
Newell, Leon B., (Hon.)	Charlotte
*Newman, Harold H., S	Salisbury
Newton, Howard L., OALR	Charlotte
Newton, Wm. K	North Wilkesboro
Nichols, Alvin A	Sylva
Nichols, Ashbury A	Sylva
*Nichols, Austin F.	Roxboro
*Nichols, R. E., Jr., Gen	Durham
Nichols, Rhodes E., (Hon.) Gen.	Durham
Nicholson, B. M., Gen	Enfield
Nicholson, P. A., (Hon.) Gen.	Washington
Nicholson, W. M., I	Durham
Nisbet, D. Heath, I	Charlotte
*Noble, R. P., (Hon.) R	Raleigh
*Nobles, Jos. E., (Hon.) Gen.	Greenville
Noblin, Roy L., U and S	Oxford
Noell, R. H., Gen	Rocky Mount
Norburn, C. S., S	Asheville
Norburn, R. L., S	Asheville
*Norfleet, E. P.	Roxobel
Norman, J. S., OALR	Gastonia
Norment, W. B., S	Greensboro
Norris, Henry, (Hon.)	Waverly Mills, S. C.
*Northington, J. M., I	Charlotte
*Norton, Roy, PH	Raleigh
*Nowell, S. C.	Hickory
*Nowlin, Preston, S	Charlotte
Oates, George, (Hon.)	Grover
*O'Dell, J. W.	Dunn
*Ogburn, L. C., Gen	Winston-Salem
*Oliver, A. S., Ob	Raleigh
Oliver, Robt. D., Gen	Selma
Orgain, Edward S., I	Durham
Ormand, J. W	Monroe
*Ormond, A. L., T	Black Mountain
*Orr, Chas. C., (Hon.) T	Asheville
Orr, P. B., (Hon.)	Asheville
*Osborne, Gladys, H	Waynesville
Osborne, Joe E	Rosman
Outland, R. B	Rich Square
*Outlaw, J. K., OALR	Albemarle
*Overcash, W. E., T	Southern Pines
Owen, D. S., I	Fayetteville
*Owen, J. F., NP	Raleigh
Owen, M. L.	Canton
Owen, Robert H	Canton
*Owens, F. L.	Pinehurst
*Ownbey, Arthur D., Gen	Greensboro
*Pace, K. B., Gen	Greenville
Paddison, J. R., (Hon.) Gen.	Kernersville
Padgett, Charles K	Shelby
Page, B. W.	Trenton
Page, R. O., OALR	Kinston
Palmer, Horace, Gen	Littleton
Palmer, M. C.	Tryon
*Palmer, Yates S., Gen	Valdese
*Papineau, A., T	Plymouth
Parker, Clifton G	Woodland
Parker, G. E., (Hon.) Gen	Benson
*Parker, G. S., S	Asheville
Parker, H. R., Gen	Greensboro
*Parker, J. W., Jr	Seaboard
*Parker, O. L., OALR	Clinton
Parker, Paul G	Erwin
Parker, S. F.	Shelby
Parker, W. T., S	Fayetteville
*Parker, Walter R	Jackson
*Parks, L. L., PH	Tarboro
Parrott, M. C., S	Kinston
Parrott, Wm. T., (Hon.)	Kinston
*Parsons, W. H	Ellerbe
*Pate, F. J	Greensboro
Pate, J. F	Canton
*Pate, Jas. G	Gibson
Patrick, L. N., OALR	Gastonia
*Patterson, Fred M., S	Greensboro
Patterson, J. H., Gen	Broadway
Patterson, Jos. F., (Hon.) Gen.	New Bern
Peeler, Clarence N., (Hon.) ALR	Charlotte
Peeler, John H., (Hon.)	Salisbury
*Peery, Vance P., OALR	Kinston
*Peete, C. H., (Hon.)	Warrenton

* Present at 1938 meeting at Pinehurst.

Name	*Address*
*Pendleton, Wilson, T.	Asheville
*Pepper, John Kerr, (Hon.) R	Winston-Salem
Perrow, James B. S., Gen.	Durham
Perry, A. H.	Wood
*Perry, D. R., Gen.	Durham
Perry, E. M., Gen.	Rocky Mount
*Perry, G. G., Gen.	High Point
Perry, H. B.	Boone
Perry, H. G.	Louisburg
Person, Edgar C., OALR	Pikeville
Person, J. B., (Hon.) Gen.	Selma
*Persons, Elbert Lapsley, I.	Durham
Peters, W. A.	Elizabeth City
*Peterson, C. A. (Hon.)	Spruce Pine
Petteway, George H.	Charlotte
*Pfohl, Samuel F., (Hon.) Gen.	Winston-Salem
Phifer, Edward W., (Hon.) Gen.	Morganton
*Phillips, C. C., R.	Charlotte
*Phillips, E. N.	North Wilkesboro
Pickett, John A., (Hon.)	Burlington
Pittman, E. E.	Oak City
*Pittman, M. A., S.	Wilson
Pittman, R. L., S.	Fayetteville
Pittman, W. A., U.	Fayetteville
Plumer, D. E.	Mocksville
Pollock, David, Gen.	Hobgood
Pollock, Raymond, (Hon.) Gen.	New Bern
*Pool, B. B., Gen.	Winston-Salem
Poole, C. Glenn, Pd.	Winston-Salem
Poole, C. T.	St. Pauls
Post, J. J., Gen.	Greensboro
Powell, H. S., Gen.	Gastonia
Powell, Jesse A.	Edenton
Powers, Frank P., ALR	Raleigh
*Prefontaine, E., OALR	Greensboro
Pressley, James L.	Statesville
Pressly, Geo. W., (Hon.) S.	Charlotte
Pressly, J. M., Gen.	Belmont
Preston, J. Z.	Tryon
Price, H. L., Gen.	Taylorsville
Pritchard, G. L.	Black Mountain
*Procter, I. M., Ob.G.	Raleigh
*Pugh, Chas. H., Gen.	Gastonia
Pulliam, B. E., Gen.	Winston-Salem
*Purdy, J. J., Gen.	Oriental
Putney, R. H., Gen.	Elm City
*Quickel, John C., OALR	Gastonia
*Raby, J. G., Gen.	Tarboro
*Rainey, W. T., Gen.	Fayetteville
Ramsaur, J. T., Gen.	Cherryville
Ramseur, W. L.	Kings Mountain
Ramsey, James G., S.	Washington
Rand, C. H.	Fremont
Rand, E. G., Gen.	Raleigh
Raney, R. B.	Durham
*Rankin, S. W., OALR	Winston-Salem
*Rankin, Watson S., (Hon.) PH	Charlotte
*Ranson, J. Lester	Charlotte
*Ravenel, S. F., Pd.	Greensboro
Ray, F. L.	Charlotte
*Ray, John B., (Hon.)	Leaksville
Ray, O. L., (Hon.) Gen.	Raleigh
Ray, S. P.	Leaksville
Reaves, W. P., (Hon.) OALR	Greensboro
*Reavis, Chas. W., NP	Raleigh
Redding, A. H., (Hon.)	Cedar Falls
Redwine, J. Dan	Lexington
Reed, D. H.	Wagram
Reeves, G. F., Gen.	Walnut Cove
Reeves, J. L.	Canton
Reeves, R. J.	Leicester
Reeves, Robert J., R.	Durham
*Register, F. M., (Hon.) Psychiatry	Kinston
*Register, J. F., S.	Greensboro
Reid, Geo. P., (Hon.)	Forest City
Reid, James W., Gen.	Lowell
Reitzel, C. E., (Hon.) Gen.	High Point
*Reynolds, C. V., (Hon.) PH	Raleigh
Reynolds, E. H.	Mayodan
*Rhodes, J. S.	Raleigh
*Rhodes, Jas. S., (Hon.) GU	Williamston
*Rhudy, Booker E., R.	Greensboro
*Rhyne, Robt. E., (Hon.) PT	Gastonia
Rhyne, S. A., Gen.	Statesville
*Richardson, W. P., PH	Chapel Hill
Ricks, Leonard E., (Hon.)	Fairmont
Riddle, J. B., (Hon.) Gen.	Morganton
*Riggsbee, A. E., Gen.	Durham
*Ringer, Paul H., (Hon.) I.	Asheville
Roberson, E. L., S.	Tarboro
Roberson, Foy, S.	Durham
Robertson, Robt. S.	Hazelwood
*Roberts, B. W., Pd.	Durham
Roberts, Bryan N., Gen.	Hillsboro

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Roberts, Roy F.	Asheville
Roberts, W. M., Or.	Gastonia
Robertson, C. B.	Jackson
*Robertson, E. M., S.	Durham
*Robertson, James F., S.	Wilmington
Robertson, J. N., OALR	Fayetteville
*Robertson, L. H.	Salisbury
Robertson, W. B.	Burnsville
*Robinson, C. W.	Charlotte
*Robinson, D. E., Pd.	Burlington
*Robinson, J. D.	Wallace
Robinson, J. L., S.	Gastonia
*Robinson, R. L., PH.	Raleigh
Rodman, J. C., (Hon.) Gen.	Washington
Rogers, Jas. Rufus, (Hon.) Gen.	Raleigh
Rogers, W. A., (Hon.)	Franklin
*Rollins, Vance B.	Henderson
*Root, Aldert S., Pd.	Raleigh
Rose, A. H., (Hon.) Gen.	Smithfield
Rose, David J., S.	Goldsboro
Rosenau, M. J., PH.	Chapel Hill
*Ross, Geo. H., (Hon.) Gen.	East Durham
*Ross, Otho B.	Charlotte
*Ross, Robert A., Ob.G.	Durham
*Ross, T. W.	Charlotte
*Rosser, R. G.	Vass
*Rousseau, J. P., R.	Winston-Salem
*Royal, Ben F., S.	Morehead City
*Royal, D. M., Gen.	Salemburg
*Royal M. A., (Hon.) OALR	Elkin
Royster, Hubert A., (Hon.) S	Raleigh
Royster, S. S., (Hon.)	Shelby
Royster, Thos. H., OALR	Tarboro
*Royster, Thos. S., S.	Henderson
*Ruark, R. J., Ob.G.	Raleigh
Rucker, A. A.	Rutherfordton
Rudd, J. C., Gen.	Greensboro
Rudisill, J. D., S.	Lenoir
Ruffin, D. W.	Ahoskie
Ruffin, J. B.	Powellsville
*Ruffin, J. M., I.	Durham
Russell, C. R.	Granite Falls
Russell, Jesse M.	Canton
Russell, W. M., OALR	Asheville
*Sabiston, Frank, OALR	Kinston
Sadler, R. C.	Whiteville
Saliba, M. M., Oph.	Wilson
Salley, E. McQueen, (Hon.)	Hendersonville
Salmons, H. C., (Hon.)	Elkin
Sample, R. C.	Hendersonville
Sanger, P. W.	Charlotte
Saunders, Joseph H., (Hon.)	Williamston
Saunders, John R.	Lewiston
Saunders, John T., Or.	Asheville
Saunders, S. A.	Aulander
*Saunders, S. Stewart, Pd.	High Point
Sawyer, Chas. J., (Hon.) OALR	Windsor
Sawyer, W. W., (Hon.) OALR	Elizabeth City
Schaffle, Karl, T.	Asheville
Schallert, P. O., Gen.	Winston-Salem
*Schenk, Sam M., S.	Shelby
*Schoenheit, E. W., I.	Asheville
*Schoonover, R. A., Gen.	Greensboro
Schuler, J. E., Gen.	East Durham
Scott, R. C., I.	Asheville
Scott, S. F.	Union Ridge
*Scruggs, W. Marvin, S.	Charlotte
Seamans, C. M., Gen.	Banners Elk
*Seay, Hillis L., T.	Charlotte
Seay, T. W.	Spencer
*Selby, W. E.	Charlotte
Sessoms, E. T., Gen.	Roseboro
Sevier, J. T., (Hon.)	Asheville
*Shafer, Irving E.	Salisbury
*Sharp, O. L., I.	Greensboro
*Sharpe, C. R.	Lexington
*Sharpe, Frank A., Ob.G.	Greensboro
Sharpe, Frank L., (Hon.) Gen.	Statesville
Shaver, W. T., S.	Abemarle
*Shaw, J. A., Pd.	Fayetteville
*Shaw, L. R.	Statesville
*Shelburne, P. A., I.	Greensboro
Sherrill, H. R.	Lawndale
*Sherrill, P. M.	Thomasville
Shirley, H. C., ALR	Charlotte
Shohan, Jos., R.	Greensboro
Shull, J. Rush, R.	Charlotte
Shure, Irvin, Gen.	Bethel
*Sidbury, J. B., Pd.	Wilmington
*Sigman, F. G., R.	Spencer
*Sikes, C. Henry, Gen.	Greensboro
Sikes, G. L., (Hon.) Gen.	Salemburg

* Present at 1938 meeting at Pinehurst.

Name	*Address*
*Simmons, R. R., U.	Winston-Salem
Simons, C. E., Gen.	Wilson
Singletary, G. C.	Clarkton
Sink, C. S.	North Wilkesboro
*Sink, V. Rex, OALR.	Winston-Salem
Sisk, C. N., PH.	Waynesville
Siske, Grady C., Gen.	Pleasant Garden
*Skeen, L. B., T.	Sanatorium
*Skinner, Louis C., (Hon.) Gen.	Greenville
Slate, J. E., Gen.	High Point
*Slate, J. W., Gen.	High Point
*Slate, John S., (Hon.) Gen.	Winston-Salem
*Slate, M. L., I.	High Point
Slate, Wesley C., (Hon.)	Spencer
Sloan, A. B., Gen.	Mooresville
Sloan, D. B., OALR.	Wilmington
*Sloan, H. L., Oph.	Charlotte
Sloan, Wm. H., Gen.	Garland
Sloan, Wm. S., Gen.	Wilson
*Sloop, Eustace H., Gen.	Crossnore
Small, Victor R., P.	Clinton
Smith, A. Jones, Gen.	Black Creek
Smith, Alick T., Gen.	Greensboro
Smith, Annie T., Gen.	Durham
Smith, B. R., I.	Asheville
Smith, C. T., I.	Rocky Mount
Smith, D. L.	Saluda
Smith, D. T., I.	Durham
*Smith, D. W.	Waynesville
Smith, F. C., Oph.	Charlotte
Smith, F. G., S.	Wilson
Smith, F. L.	Burlington
Smith, G. M.	Monroe
Smith, Harold Benj.	N. Wilkesboro
Smith, J. A.	Lexington
*Smith, J. G., Gen.	Rocky Mount
*Smith, John McNeill	Rowland
Smith, Joseph, Gen.	Greenville
*Smith, Jos. E.	Windsor
*Smith, O. F., (Hon.) Gen.	Scotland Neck
Smith, R. C., Gen.	Ayden
*Smith, R. E.	Mount Airy
*Smith, Sidney, GU	Raleigh
Smith, Thos. A.	Charlotte
Smith, W. C.	Goldsboro
Smith, W. G., Gen.	Wendell
*Smith, William Gordon	Thomasville
*Smith, Wm. H., I.	Goldsboro
Smoot, J. E., (Hon.)	Concord
*Soady, J. H.	Asheboro
*Sorrell, F. Y., Gen.	Wadesboro
*Southard, C. G., Gen.	Greensboro
Sox, Carl C., Gen.	Kenly
Spainhour, Ellis H., (Hon.) Gen.	Winston-Salem
*Sparrow, Thos. DeL., S.	Charlotte
Speas, D. C., Gen.	Winston-Salem
Speas, W. P., Oph.	Winston-Salem
*Speed, J. A., Gen.	Durham
Speight, J. A., Gen.	Rocky Mount
*Spencer, Frederick B.	Salisbury
Spencer, Wm. O., (Hon.) Gen.	Winston-Salem
*Spicer, Richard W., Ob.	Winston-Salem
*Spikes, N. O., Gen.	Durham
*Spoon, S. C.	Burlington
Sprinkle, C. N.	Weaverville
Sprunt, Douglas H., Path.	Durham
Sprunt, W. H., Jr., S.	Winston-Salem
*Squires, Claude B., U.	Charlotte
*Stanford, Lois Foote, Gen.	Durham
*Stanford, W. R., I.	Durham
Stanley, John H., Gen.	Four Oaks
*Stanton, D. A., (Hon.) Gen.	High Point
*Starling, H. M., Gen.	Winston-Salem
*Starling, W. P., Gen.	Clinton
Staton, L. R.	Harriman, Tenn.
Stenhouse, Henry M., Oph.	Goldsboro
Stephenson, B. E., Gen.	Roanoke Rapids
*Stevens, M. L., (Hon.), T.	Asheville
Stewart, Dan N.	Hickory
*Stimpson, R. T., PH.	Raleigh
Stone, G. E., Gen.	King
Stone, M. L., Gen.	Rocky Mount
*Street, C. A., Pd.	Winston-Salem
*Street, M. E., (Hon.) I.	Glendon
Stretcher, R. H.	Waynesville
Strickland, Arthur T., Gen.	Wilson
Strickland, E. F., (Hon.)	Winston-Salem
Strickland, E. L., Ob. and Pd.	Wilson
*Strickland, H. G., OALR.	Greensboro
*Strickland, W. M., Gen.	Wendell
Stringfield, Samuel L., (Hon.)	Waynesville
Stringfield, Thos. (Hon.)	Waynesville

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Stringfield, Thos., Jr.	Waynesville
*Strosnider, Chas. F., I.	Goldsboro
Stroupe, R. A. U., Jr., Gen.	Mount Holly
Strowd, W. A., Gen.	Durham
*Stutz, M. Greer	Southern Pines
Suiter, W. G., Gen.	Weldon
Sullivan, J. T.	Asheville
Summerlin, Harry	Laurinburg
*Summerville, W. M.	Charlotte
*Sumner, E. A.	High Point
*Sumner, G. H.	Asheboro
*Sumner, Howard L., PH.	Asheville
Surles, J. B., Gen.	Four Oaks
Sutton, Carl W., (Hon.)	Richlands
Swann, C. C., ALR	Asheville
Swann, Jos. F., (Hon.)	Raleigh
*Sweaney, H. M., S.	Durham
Swindell, Lewis H., S.	Washington
*Sykes, R. P.	Asheboro
*Symington, John, PH.	Carthage
*Tally, B. T., S.	Albemarle
Tally, J. S., Gen.	Troutman
*Tankersley, J. W., S.	Greensboro
Tate, W. C., S.	Banners Elk
Tatum, Roy C., Gen.	Mortimer
*Tatum, Walter Lowe	Salisbury
*Tayloe, John Cotten, Ob. and Pd.	Washington
Tayloe, Joshua II, S.	Washington
*Taylor, A. D.	Charlotte
Taylor, Chas. W., Gen.	Kings Park, N. Y.
Taylor, E. H. E., NP	Morganton
*Taylor, F. R., I.	High Point
*Taylor, Frank V., OALR	Murphy
Taylor, G. W., S.	Mooresville
Taylor, H. C.	Charlotte
Taylor, J. N., (Hon.)	Greensboro
*Taylor, R. W., I.	Oxford
*Taylor, S. R., OALR	Greensboro
Taylor, Thos. Jeff., Gen.	Roanoke Rapids
Taylor, W. I.	Burgaw
*Taylor, Wm. L., (Hon.) S.	Oxford
*Temple, R. H.	Kinston
Tennent, G. S., (Hon.) Oph.	Asheville
*Terry, J. R.	Lexington
*Terry, Wm. Calvin	Hamlet
*Tew, Cloyce, Ob.	Raleigh
Thaxton, B. A.	Roxboro
Thigpen, H. G., Gen.	Scotland Neck
*Thomas, C. D., T.	Sanatorium
Thomas, J. G.	Greensboro
*Thomas, Walter Lee, Ob.G.	Durham
*Thomas, W. N., S.	Oxford
Thompson, A. F., (Hon.) OALR	Troy
Thompson, C. A.	Sparta
*Thompson, C. D., (Hon.) Gen.	High Point
*Thompson, Edg. S.	Winston-Salem
*Thompson, H. C.	Shelby
*Thompson, Hugh A., Or.	Raleigh
*Thompson, Joseph W., I.	Creedmoor
*Thompson, S. R.	Charlotte
Thurston, Asa, Gen.	Taylorsville
*Todd, L. C., CP	Charlotte
Townsend, M. L.	Washington, D. C.
Townsend, R. G.	St. Pauls
Triplett, W. R.	Purlear
Trivette, W. A., I.	Houstonville
Trotter, Fred O.	Hendersonville
*Troxler, R. M.	Burlington
*Tucker, Earl Van, Gen.	Grifton
*Tucker, John H., (Hon.) OALR	Charlotte
Turner, H. G., S.	Raleigh
*Turrentine, Kilby P., I.	Kinston
*Tuttle, A. F.	Spray
*Tuttle, Reuben G., Gen.	Winston-Salem
Tydeman, F. W. L.	San Francisco, Cal.
Tyler, E. R., D.	Durham
*Tyndall, R. G.	Kinston
*Tyner, Carl V., S.	Leaksville
*Tyson, T. D., (Hon.)	Mebane
*Upchurch, T. G., Gen.	Smithfield
Utley, H. H., (Hon.) Gen.	Benson
Valk, A. deT., S.	Winston-Salem
*Vann, H. M., Anatomist	Wake Forest
Vaughan, J. C.	Rich Square
Vaughan, W. W., R.	Durham
Verdery, W. C., Gen.	Fayetteville
Verner, Carl Hugh, OALR	Forest City
*Vernon, Jas. W., NP	Morganton
Vestal, Willis J., (Hon.)	Lexington
Vick, Geo. D., (Hon.)	Selma
Wadsworth, H. B., Gen.	New Bern
*Walker, H. D., (Hon.)	Elizabeth City
Walker, J. B.	Burlington

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Walker, L. K.	Ahoskie
*Walker, R. J., Jr., Gen.	Snow Hill
Wall, Roger I., OALR	New York City
*Wall, R. L., Anes.	Winston-Salem
*Wallin, L., PH	Wadesboro
*Walters, Chas. M.	Burlington
*Walton, G. B.	Chadbourn
Wannamaker, Edw. J., Jr., I	Charlotte
Ward, Jesse E., (Hon.)	Robersonville
*Ward, John LaB., Pd	Asheville
Ward, L. A.	Hertford
Ward, Needham E., Gen.	Greenville
Ward, Vernon A.	Robersonville
*Ward, W. T., Gen.	Raleigh
Warfield, Mary Cabell	Blowing Rock
*Warren, R. F.	Prospect Hill
Warrick, L. A.	Goldsboro
*Warwick, H. C., Gen.	Greensboro
Washburn, J. M., I	Lake Lure
*Watkins, F. B., P.	Morganton
Watkins, G. T., Jr., Gen.	Durham
Watkins, W. M., Gen.	Durham
Watson, John B., Gen.	Raleigh
Watson, Paul S.	Madison
*Watson, Thos. M., Pd.	Greenville
Watts, N. C., Gen.	Taylorsville
Weathers, Bahnson, S	Roanoke Rapids
*Weathers, R. R., Gen.	Knightdale
Weaver, W. J., (Hon.)	Asheville
Webb, B. G., (Hon.)	Andrews
Webb, W. P., (Hon.)	Rockingham
Weddington, J. L.	Hendersonville
Weinstein, M. H.	Fairmont
Weinstein, R. L.	Fairmont
Weizenblatt, Sprinza, Oph.	Asheville
Wessell, John C., (Hon.) I	Wilmington
West, B. C.	Kinston
West, C. F.	Kinston
*West, Louis N., OALR	Raleigh
West, Robert M., (Hon.)	Salisbury
Westcott, W. E., S.	Asheville
Westmoreland, J. R.	Canton
Whaley, James D., U	Hickory
*Wharton, Watson, Gen.	Smithfield
Wheeler, J. H.	Henderson
Wheless, J. B.	Louisburg
Whelpley, Frank L.	Goldsboro
Whichard, M. P.	Edenton
*Whicker, Guy L.	Kannapolis
Whicker, Max E.	China Grove
*Whims, H. C.	Rutherfordton
*Whisnant, Albert M., (Hon.) OALR	Charlotte
*Whitaker, Paul F., I	Kinston
Whitaker, R. B.	Whiteville
White, C. H.	Burnsville
*White, F. W. M., Gen.	Halifax
*White, R. A., Ob.	Asheville
White, T. P., I	Charlotte
White, W. H. C.	Elizabeth City
*Whitehead, S. L., D.	Asheville
Whitfield, B. W., S.	Murphy
*Whittington, Claude, Gen.	Greensboro
*Whittington, J. B., S.	Winston-Salem
Whittington, Wm. W., (Hon.) Gen.	Snow Hill
Wilcox, J. W., (Hon.)	West End
Wilkerson, Charles B., (Hon.) Gen.	Raleigh
Wilkes, Grover	Sylva
*Wilkes, Marcus B.	Laurinburg
*Wilkins, J. C.	Haw River
Wilkins, J. W., OALR	Mount Olive
*Wilkins, R. B., OALR	Durham
Wilkins, S. A., (Hon.) Gen.	Dallas
*Wilkinson, C. T., Gen.	Wake Forest
Wilkinson, R. W., Jr.	Wake Forest
Williams, Albert F., (Hon.) Gen.	Wilson
Williams, Chas. F., Pd.	Raleigh
*Williams, Claude B., (Hon.)	Elizabeth City
Williams, E. J.	Monroe
Williams, J. D., Jr., Gen.	Stokesdale
Williams, J. D., (Hon.) Gen.	Guilford Station
Williams, L. L.	Spruce Pine
*Williams, L. P.	Edenton
Willis, A. P., (Hon.) S.	Candler
*Willis, B. C., S.	Rocky Mount
Willis, W. M., Gen.	Farmville
Wilmerding, W. E.	Skyland
*Wilson, Frank, Jr., S.	Raleigh
Wilson, Frank E., Gen.	Mooresville
Wilson, Newton G.	Madison
Wilson, R. B., Anes.	Asheville
Winkler, Harry, Ind.S.	Charlotte
Winn, W. C.	Williamston
*Winstead, J. L., S.	Greenville
Winston, P. H.	Clarksville, Va.

* Present at 1938 meeting at Pinehurst.

Name	*Address*
Wiseman, P. H.	Avondale
Wisely, Martin	Edenton
Wishart, Wm. E.	Charlotte
*Wolfe, H. C., OALR	Greensboro
Wolff, D. R., Gen.	Greensboro
Wood, Frank	Marion
Wood, Martha	Marion
*Woodard, A. G., OALR	Goldsboro
Woodard, C. A., S.	Wilson
Woodcock, John H., PH	Hendersonville
*Woodhall, Barnes, S.	Durham
Woodson, Charles W., (Hon.)	Salisbury
Woodward, B. L.	Kenly
Woodward, J. G., Syphilology	Asheville
Wooten, Floyd P., S.	Kinston
Wooten, W. I., S.	Greenville
Worley, J. H.	Asheville
*Wright, J. B., (Hon.) OALR	Raleigh
Wright, O. E., Gen.	Winston-Salem
Wyatt, A. T.	Lillington
Wyatt, Wortham, D.	Winston-Salem
Wylie, W. deK., I.	Winston-Salem
Yarborough, R. F., (Hon.)	Louisburg
Yates, R. F.	Clayton
*Yoder, Paul A., T.	Winston-Salem
*York, Alexander Arthur, Gen.	High Point
Young, G. McD.	Postell
Young, J. C., U.	Asheville
*Yow, D. E.	Concord
Yow, I. A.	Concord
*Zealy, A. H., Jr.	Goldsboro

* Present at 1938 meeting at Pinehurst.

ROSTER OF FELLOWS FOR 1938
BY COUNTIES

Note. Every physician in the state whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic, and medical education, date of State license and date State Society was joined. A few did not take advantage of the opportunity. Anyone finding an error should report it to the Secretary of the society.

ALAMANCE-CASWELL COUNTIES SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Scott, S. F., Union Ridge; Univ. of Pa., 1918; U.N.C.	1918	1920
Secretary: Johnson, Joseph L., Graham; Jefferson, 1926	1926	1930
Anderson, Charles A., Burlington, (Hon.); Coll. P. and S. Balt., 1901	1893	1896
Brooks, R. E., Burlington; Jeff. Med. Coll., 1920; U.N.C.	1920	1922
Carrington, Geo. L., Burlington; Johns Hopkins, 1920; U.N.C.	1920	1925
Cook, W. E., Mebane; Wash. Univ., 1930; U.N.C.	1930	1934
Ellington, A. J., Burlington; Columbia Univ., 1915; Wake Forest	1915	1917
Goley, Willard Coe, Graham; Univ. of Pa., 1924; U.N.C.	1924	1926
Harden, Boyd, Burlington; Univ. of Pa., 1928	1931	1931
Harden, Graham, Burlington; Univ. of Pa., 1919	1920	1922
Lupton, C. C., Burlington; Temple Univ; 1931, U.N.C.	1931	1934
Malloy, S. A., Yanceyville, (Hon.); Ky. School of Med., 1897	1898	1903
McDade, B. B.; Burlington; Univ. of Md., 1918; U.N.C.	1918	1920
McPherson, C. W., Burlington; Univ. of Md., 1910; U.N.C.	1910	1912
Montgomery, Harry M., Burlington (Hon); N. C. Med. Coll., 1903	1903	1904
Moore, Henry Blanchard, Graham; Jeff. Med. Coll, 1920; Wake Forest	1920	1923
Pickett, John A., Burlington, (Hon.); Univ. of Tenn. Coll. of Med., 1894	1894	1904
Robinson, D. E., Burlington; Harvard Med. Coll., 1927	1929	1930
Smith, F. L., Burlington; Univ. of Pittsburg, 1927	1928	1928
Spoon, S. C., Burlington; Univ. of Md., 1918; U.N.C.	1918	1920
Troxler, R. M., Burlington; Univ. of Md., 1914	1914	1915
Tyson, T. D., Mebane, (Hon.); Univ. Coll. of Med., Richmond, 1899	1899	1904
Walker, J. B., Burlington; Med. Coll. of Va., 1914; U.N.C.	1914	1916
Walters, C. M., Burlington; Univ. of Md. and Coll. of P. and S., Balt., 1908; U.N.C.	1908	1909
Warren, R. F., Prospect Hill; Atlanta School of Med., 1911	1911	1920
J. C. Wilkins, Haw River; Univ. of Md., 1911; U.N.C.	1911	1920

ALEXANDER—SEE IREDELL-ALEXANDER

ALLEGHANY—SEE WILKES-ALLEGHANY

ANSON COUNTY SOCIETY

President: Sorrell, F. Y., Wadesboro; Jeff. Med. Coll., 1930; Wake Forest	1930	1933

Name and Address	*Licensed*	*Joined State Society*
Secretary: Davis, J. M., Wadesboro; Columbia Univ., 1913; Wake Forest	1913	1920
Allen, Chas. I., Wadesboro; Columbia Univ.; Coll. P. and S., 1913; Wake Forest	1913	1922
Bennett, Jos. H., Wadesboro, (Hon.); Univ. of Md., 1894	1894	1904
McGoogan, Benj. J., Morven; Univ. of Md., 1912; U.N.C.	1912	1923
Wallin, L., Wadesboro; Univ. of Tenn. Med. Coll. 1909	1909	1938

ASHE—SEE WATAUGA-ASHE

AVERY COUNTY SOCIETY

President: McGuire, B. B., Newland; Jeff. Med. Coll., 1918; U.N.C.	1919	1928
Secretary: Fink, Emma S., Crossnore; Vanderbilt, 1936	1938	1938
Burleson, W. B., Plumtree; Univ. of Md., 1915; U.N.C.	1915	1916
Seamans, C. M., Banners Elk; Univ. of Louisville, 1935	1937	1938
Sloop, Eustice H., Crossnore; N. C. Med. Coll. 1905; Jeff. Med. Coll., 1908	1905	1907
Tate, W. C., Banners Elk; Tenn. Med. Coll., 1908	1909	1912

BEAUFORT COUNTY SOCIETY

President:		
Secretary: Tayloe, John C., Washington; Univ. of Pa., 1922; U.N.C.	1924	1925
Bonner, J. B., Aurora; Univ. of Md. and Coll. of P. and S., 1918; U.N.C.	1918	1920
Ford, D. E., Washington; Univ. of Mich., 1908	1925	1924
Hackler, R. H., Washington; Jeff. Med. Coll., 1926	1926	1928
Larkin, E. W., Washington; Va. Med. Coll., 1917	1920	1922
Mariner, N. B., Belhaven, (Hon.); Univ. Coll. of Med., Va., 1903	1903	1904
Nicholson, P. A., Washington, (Hon.); P. and S. Balt., 1889	1889	1890
Ramsey, Jas. G., Washington; Univ. of Pa., 1922; U.N.C.	1924	1924
Rodman, J. C., Washington, (Hon.); Bellevue Med. Coll., 1892	1892	1895
Swindell, Lewis H., Washington; Univ. of Pa., 1916	1916	1919
Tayloe, Joshua, II., Washington; Univ. of Pa., 1923; U.N.C.	1923	1926

BERTIE COUNTY SOCIETY

President: Garris, Frank Henry, Lewiston; Jeff. Med. Coll., 1912	1912	1918
Secretary—Saunders, Shelden A., Aulander; Jeff. Med. Coll., U.N.C.	1914	1918
Castelloe, Cola, Windsor; Univ. of Pa., 1917; U.N.C.	1917	1926
Norfleet, E. P., Roxobel; Med. Coll., Va., 1914	1914	1920
Ruffin, J. B., Powellsville; Univ. of the South, 1898	1906	1904
Saunders, John Rudolph, Lewiston; Emory Univ., 1926; Wake Forest	1926	1931
Sawyer, Charles Judson, Windsor, (Hon.); P. and S. Balt., 1895	1895	1897
Smith, Joseph Elmer, Windsor; Med. Col., Va., 1921	1921	1922

BLADEN COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Clark, D. D., Clarkton; Med. Coll. of Va., 1917	1917	1920
Secretary: Clark, E. S., Clarkton; Med. Coll. of Va., 1914	1914	1915
Bennett, E. C., Elizabethtown; Med. Coll., Va., 1926	1926	1927
Bridger, D. H., Bladenboro; Jeff. Med. Coll., 1922	1922	1925
Cromartie, R. S., Elizabethtown; N. C. Med. Coll., 1900	1900	1906
Hutchinson, S. S., Bladenboro; N. C. Med. Coll, 1911	1911	1917
Singletary, G. C., Clarkton; Univ. of Pa., 1917	1917	1918

BRUNSWICK COUNTY SOCIETY

BUNCOMBE COUNTY SOCIETY

President: White, R. A., Asheville; Univ. Cincinnati Coll. of Med., 1918	1920	1921
Secretary: Kutscher, G. W., Jr., Asheville; Univ. of Pittsburgh, 1923	1925	1926
Adams, J. L., Asheville; Jeff. Med. Coll. 1910	1910	1913
Ambler, Arthur C., Asheville; Jeff. Med. Coll., 1920; U.N.C.	1921	1922
Archer, Isaac J., Black Mountain, (Hon.); Northwestern Univ. Med. School, 1896	1905	1907
Baier, Geo. F., Jr., W. Asheville; Hahnemann Med. Col., 1906	1920	1930
Barrier, H. W., Black Mountain; Chicago Med. School, 1921	1931	1936
Beall, L. G., Black Mountain, (Hon.); N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1906
Bittinger, S. M., Black Mountain; George Wash. Univ., 1918	1924	1924
Bliss, Forrest E., Fletcher; Coll. of Med. Evangelists, 1923	1933	1934
Brewton, W. A., Enka; Univ. of Pa., 1927; Wake Forest	1927	1929
Briggs, Henry H., Jr., Asheville; Yale, 1931	1933	1934
Brookshire, Harley G., Asheville, (Hon.); N. C. Med. Coll., 1905	1905	1906
Brown, Kermit E., Asheville; Jeff. Med. Coll., 1927	1927	1930
Brownsberger, Ethel, Biltmore; Coll. of Med. Evangelists, 1927	1933	1934
Brownsberger, John F., Fletcher; Coll. of Med. Evan., 1925	1928	1929
Buckner, J. M., Swannanoa; Univ. of N. C., 1909	1909	1912
Clark, Harold S., Asheville; Univ. of Pa., 1922; U.N.C.	1922	1924
Cocke, C. Hartwell, Asheville; Cornell Univ., 1905	1912	1913
Cocke, E. R., Asheville; Jeff. Med. Coll., 1913; U.N.C.	1914	1917
Cocke, Jere E., Asheville, (Hon.); Louisville Med. Coll., 1905	1905	1906
Colby, C. DeW., Asheville; Univ. of Mich., 1892; Army Med. School, 1895	1909	1912
Craddock, Alva B., Asheville; Johns Hopkins, 1918	1923	1924
Carow, S. L., Asheville; Emory Univ., 1925	1926	1927
Crump, C. L., Asheville; Baylor Univ., 1930	1935	1936
Crump, Curtis, Asheville; Harvard, 1926	1933	1934
Deyton, John W., Asheville; Rush Med. Coll., 1928; U.N.C.	1930	1931
Dougherty, J. H., Asheville; N. Y. Univ.; U.N.C.	1936	1937
Eckel, O. F., Asheville, (Hon.); Med. Coll. of S. C., 1906	1907	1908
Edwards, B. O., Asheville; N. C. Med. Coll., 1905	1905	1910
Elias, Lewis W., Asheville, (Hon.); Columbia Univ., Col. of P. and S., 1903	1906	1906
Freeman, Wm. T., Biltmore, (Hon.); Univ. of Ga., 1917	1927	1929
Gillespie, S. C., Asheville; Univ. of Cincinnati, 1931	1935	1936
Grantham, Wm. L., Asheville, (Hon.); N. C. Med. Coll., 1906	1906	1908

Name and Address	*Licensed*	*Joined State Society*
Greene, Joseph B., Asheville; Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville; Johns Hopkins, 1916	1916	1918
Griffin, M. A., Asheville; Jeff. Med. Coll., 1917; U.N.C.	1917	1918
Griffin, W. R., Asheville; Jeff. Med. Coll., 1910	1910	1919
Griffith, F. W., Asheville; Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville; Johns Hopkins Med. School, 1915	1916	1918
Harrington, Carey L., Oteen; Univ. Pa., 1922; U.N.C.	1924	1924
Henderson, Irma C., Asheville; Tulane Univ., 1933	1934	1935
Hensley, Chas. A., Asheville; Jeff. Med. Coll., 1917; Wake Forest	1917	1927
Herbert, Wm. P., Asheville; Univ. of Va., 1907	1910	1911
Hipps, A. G. T., Asheville; Jeff. Med. Coll., 1916; Wake Forest	1916	1920
Hollyday, W. M., Asheville, Univ. of Md., 1908	1914	1915
Huffines, T. R., Asheville, Indiana Univ. Med. School, 1919	1922	1924
Huston, John Walter, Asheville; Rush Med. Coll., 1904	1912	1913
Ingersoll, Louise M., Asheville; Woman's Med. Coll., 1914	1915	1917
Ivey, R. R., Biltmore; Univ. of Ala., 1909	1921	1921
Johnson, Walter R., Asheville; Univ. of Minnesota, 1924	1933	1934
Jones, Catesby, Asheville; Univ. of Md., 1893	1931	1932
Kinley, J. W., Asheville; McGill Univ., 1931	1937	1938
Lindberg, O. S., Candler; Coll. of Med. Evangelists, 1923	1925	1928
Lord, Marjory J., Montreat; Univ. of Mich., 1916	1918	1919
Lott, Wm. Clifton, Asheville; Univ. of Colorado, 1929	1930	1931
MacRae, J. D., Jr., Asheville; Univ. of Pa., 1927; U.N.C.	1927	1930
Matros, Nathaniel H., Oteen; Marquette Univ., 1930	1933	1934
McCall, A. C., Asheville; Univ. of Md., 1910; U.N.C.	1910	1914
McCracken, C. M., Fairview, (Hon.); N. C. Med. Co., 1896	1896	1904
Mears, George A., Asheville; Syracuse Univ., 1924; Wake Forest	1924	1927
Meriwether, Benj. Morsell, Asheville; Univ. of Louisville, 1915	1915	1924
Millander, Chas. W., Asheville; Tulane Univ., 1919	1921	1924
Moore, Julian A., Asheville; Univ. of Pa., 1918; U.N.C.	1918	1921
Morgan, B. E., Asheville; Univ. of Tenn., 1917	1921	1922
Morgan, G. A., Asheville; Univ. of Tenn., 1917	1920	1926
Murphy, Gibbons W., Asheville; Emory Univ., 1923	1923	1927
Norburn, Chas. S., Asheville; Univ. of Va., 1917	1921	1924
Norburn, R. L., Asheville, Vanderbilt Univ., 1925	1925	1927
Ormond, A. L., Black Mountain; Jeff. Med. Coll., 1930	1930	1935
Orr, Charles C., Asheville, (Hon.); Univ. of Md., 1904	1904	1905
Orr, Porter B., Asheville, (Hon.); Jeff. Med. Coll, 1901; U.N.C.	1901	1904
Parker, G. Farrar, Asheville; Univ. of Pa., 1923; U.N.C.	1924	1926
Pendleton, Wilson, Asheville; Univ. of Va., 1908	1919	1920
Pritchard, G. L., Black Mountain; Univ. Coll. of Med., 1913	1913	1926
Reeves, R. J., Leicester; Vanderbilt Univ., 1913	1913	1922
Reynolds, C. V., Raleigh, (Hon.); Univ. of N. Y., 1895	1895	1896
Ringer, Paul H., Asheville, (Hon.); Columbia Univ., P. and S., N. Y., 1904	1906	1907
Roberts, Roy F., Asheville; Tulane Univ., 1933	1933	1935
Russell, W. M., Asheville; Univ. Cincinnati, 1928	1931	1932
Saunders, John T., Asheville; Columbia Univ., 1926	1934	1935
Schaffle, Karl, Asheville; Univ. of Pa., 1907	1926	1927
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville; Jeff. Med. Coll., 1902	1916	1919
Sevier, J. T., Asheville, (Hon.); Jeff. Med. Coll., 1895	1895	1899

Name and Address	*Licensed*	*Joined State Society*
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910; U.N.C.	1910	1922
Stevens, M. L., Asheville, (Hon.); Balt. Med. Coll., 1891	1892	1893
Sullivan, J. T., Asheville; Bellevue Hospital	1935	1937
Sumner, Howard L., Asheville; Jeff. Med. Coll	1926	1929
Swann, C. C., Asheville; Tulane Univ., 1926	1930	1931
Tennent, G. S., Asheville, (Hon.); N. C. Med. Coll, 1894	1894	1898
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Weaver, W. J., Asheville, (Hon.); Jeff. Med. Coll., 1898	1897	1903
Weizenblatt, Sprinza, Asheville; Vienniese Univ. of Med., 1922	1929	1931
Westcott, W. E., Candler; Coll. Med. Evangelists, 1926	1930	1932
Whitehead, S. L., Asheville; Jeff. Med. Coll., 1921; Wake Forest	1921	1929
Willis, A. P., Candler, (Hon.); Univ. of N. C., 1904	1904	1906
Wilmerding, W. E., Skyland; Univ. of South, 1899	1915	1938
Wilson, R. B., Asheville; Univ. of Louisville, 1931	1933	1933
Woodward, J. G., Asheville; Univ. of Pa., 1925; U.N.C.	1925	1927
Worley, J. H., Asheville; Univ. Tenn., 1931	1934	1935
Young, J. C., Asheville; Univ. of Tenn., 1926; Wake Forest	1926	1929

BURKE COUNTY SOCIETY

President: Helms, J. Bivins, Morganton; Univ. of Pa., 1928; Wake Forest	1928	1931
Secretary: Barbour, Edith Goodwin, Morganton; Woman's Med. Coll. of Pa., 1932	1934	1934
Billings, G. M., Morganton; Tulane Univ., 1919	1919	1920
Carter, W. D., Morganton; Med. Col. of S. C., 1934	1935	1936
Ervin, John W., Morganton; Med. Coll. of Va., 1933; U.N.C.; Wake Forest	1935	1936
Kibler, W. H., Morganton, Univ. of Pa., 1914; U.N.C.	1914	1918
Long, R. H., Morganton; Jeff. Med. Coll., 1916; U.N.C.	1916	1923
Lynn, C. K., Valdese; Med. Coll. Va., 1932	1933	1937
McCampbell, John, Morganton, (Hon.); Balt. Med. Coll., 1894	1895	1899
McKee, John S., Jr., Morganton; Univ. of Pa., 1929	1929	1936
McLean, Allen, Morganton; Univ. of Md., 1908	1908	1911
Palmer,Yates S., Valdese; Med. Coll. of Va., 1931	1931	1933
Phifer, Edward W., Morganton, (Hon.); N. C., Med. Coll., 1902	1902	1904
Riddle, J. B., Morganton, (Hon.); Vanderbilt Univ., 1898	1904	1904
Taylor, E. H. E., Morganton; Tulane Univ., 1924; Wake Forest	1924	1925
Vernon, James W., Morganton; Jeff. Med. Coll., 1909; Wake Forest	1909	1913
Watkins, F. B., Morganton; Jeff. Med. Coll., 1907; U.N.C.	1907	1910

CABARRUS COUNTY SOCIETY

President:		
Secretary: Busby, Julian G., Kannapolis; Univ. of Md., 1904	1904	1905
Brandon, W. O., Concord; Med. Coll. Va., 1928	1929	1932
Burns, J. E., Concord; Med. Coll. of Va., 1923	1923	1928
Floyd, W. Russel, Kannapolis; Jeff. Med. Coll., 1929	1936	1938
King, Richard M., Concord, (Hon.); Jeff. Med. Coll., 1903	1903	1906
MacFadyen, Paul R., Concord, (Hon.); Univ. Coll. of Med., Va., 1901	1901	1904
Smoot, J. E., Concord, (Hon.); Balt. Med. Coll., 1893	1894	1902

Name and Address	*Licensed*	*Joined State Society*
Whicker, Guy L., Kannapolis; Univ. of Md., 1926	1926	1928
Yow, I. A., Concord; N. C. Med. Coll., 1906	1906	1910
Yow, D. E., Concord; Temple Univ., Med. School, 1935; Wake Forest	1935	1937

CALDWELL COUNTY SOCIETY

President: Lore, Ralph, Lenoir; Rush Med. Coll., 1932	1933	1937
Secretary: Hamer, Douglas, Jr., Lenoir; Med. Coll. of S. C.; U.N.C.	1927	1930
Blackwelder, Verne H., Lenoir; Univ. of Pa., 1929; U.N.C.	1929	1931
Corpening, O. J., Granite Falls, (Hon.); Univ. Coll. of Med., Va., 1906	1906	1906
Dula, Frederick M., Lenoir; Vanderbilt; U.N.C.	1934	1934
Fetner, L. M., Lenoir		1938
Goodman, A. B., Lenoir, (Hon.); N. C. Med. Coll., 1898	1897	1904
Hedrick, Clyde R., Lenoir; Georgetown Med. School, 1925; U.N.C.	1925	1926
Houck, Albert, Lenoir, (Hon.); P. and S., Balt., 1884	1891	1893
Kent, Alfred A., Jr., Granite Falls; Univ. of Pa., U.N.C.	1934	1934
Kent, Alfred A., Sr., (Hon.); Jeff. Med. Coll., 1885; Winter Park, Fla.	1885	1894
McNairy, Caroline, Lenoir; Woman's Med. Coll. of Pa., 1917	1917	1919
Rudisill, J. D., Lenoir; Univ. of Md., 1922	1922	1923
Russell, C. R., Granite Falls; Univ. Coll. of Med., Va., 1909; U.N.C.	1909	1918
Warfield, Mary Cabell, Blowing Rock; Woman's Med., Phila., 1922	1928	1935

CAMDEN—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

CARTERET COUNTY SOCIETY

President:		
Secretary:		
Bonner, K.P.B., Morehead City, (Hon.); Med. Coll. of Va., 1905	1905	1905
Royal, Ben. F., Morehead City; Jeff. Med. Coll., 1909; U.N.C.	1909	1912

CASWELL—SEE ALAMANCE-CASWELL

CATAWBA COUNTY SOCIETY

President: Cloninger, K. L., Conover; Univ. of Md., 1931; U.N.C.	1931	1933
Secretary: Hambrick, Robt. T., Hickory; Univ. of Tulane, 1923	1923	1924
Barnes, H. E., Hickory; Univ. of Md., 1935	1935	1938
Fresh, W. M., Hickory		1919
Fritz, William A., Hickory; Temple Univ., 1933; U.N.C.	1933	1934
Frye, Glenn R., Hickory; Jeff. Med., 1921; U.N.C.	1921	1923
Griffin, H. W., Hickory; Emory Univ., 1923	1931	1932
Hunsucker, Chas. R., Hickory; N. C. Med. Coll., 1913	1913	1920
Johnson, Harry L., Hickory; Univ. of Cincinnati, 1924; U.N.C.	1924	1927
Keever, James W., Hickory; Med. Coll. of Va., 1927	1927	1930

Name and Address	*Licensed*	*Joined State Society*
Klutz, A. F., Maiden; Jeff. Med. Coll., 1917	1917	1920
Long, Fred Y., Catawba; Balt. Med. Coll., 1898; N. C. Med. Coll.	1898	1898
Long, Glenn, Newton; N. C. Med. Coll., 1912	1912	1915
Long, T. W., Newton; Emory Univ., 1935	1935	1936
Menzies, H. C., Hickory, (Hon.); N. C. Med. Coll., 1894	1894	1899
Menzies, H. H., Hickory; Med. Coll. of Va., 1923	1923	1926
Nowell, S. C., Hickory; Univ. of Pa., 1921	1922	1924
Stewart, Dan N., Hickory; Univ. of Pa., 1935	1935	1938
Whaley, James D., Hickory; Med. Coll. of S. C., 1925	1927	1936

CHATHAM COUNTY SOCIETY

Earle, J. B., Siler City; Med. Coll. of Va., 1935	1935	1938
Edwards, J. D., Siler City, (Hon.); Louisville Med. Coll., 1887		1894
McBane, T. W., Pittsboro; Med. Coll. of Va., 1927	1927	1927

CHEROKEE COUNTY SOCIETY

President: Hill, J. N., Murphy; Univ. of Louisville, 1909	1909	1909
Secretary: Adams, Edw. E., Murphy; Jeff. Med. Coll., 1923; Wake Forest	1923	1925
Faulk, J. G., Murphy; Med. Coll. Va., 1931; Wake Forest	1931	1932
Glenn, E. B., Hiwassee Dam, Jeff. Med. Coll., 1931	1931	1938
Herbert, Fred Lee, Andrews; Tenn. Med. Coll., 1904	1912	1912
Miller, Harry, Murphy; Emory Univ., 1934	1936	1938
Mitchell, Z. P., Murphy; Med. Coll. of Va., 1920: Wake Forest	1920	1921
Morrow, W. C., Andrews; Atlanta School of Med., 1909	1909	1909
Taylor, Frank V., Murphy; N. C. Med. Coll, 1915	1915	1936
Webb, B. G., Andrews, (Hon.); Louisville Med. Coll., 1885	1885	1885
Whitfield, W. B., Murphy; Tulane Univ., 1920	1920	1935
Young, G. McD., Postell; Lincoln Memorial Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTIES SOCIETY

Powell, Jesse A., Edenton; Coll. of P. and S., Balt., 1907	1908	1909
Ward, L. A., Hertford; Univ. of N. C., 1907	1907	1915
Whichard, M. P., Edenton; Univ. of Md., 1910	1910	1919
Williams, L. P. Edenton; Bellevue Med. Coll., 1918	1919	1920
Wisely, Martin, Edenton; Univ. of Va., 1935	1937	1938

CLAY—SEE MACON-CLAY

CLEVELAND COUNTY SOCIETY

President: Falls, Fred, Lawndale; Tulane, 1930	1930	1933
Secretary: Parker, S. F., Shelby; Med. Coll. of Va., 1929; U.N.C.	1929	1931
Aydlette, Joseph P., Earl, (Hon.); Ky. Univ., 1901	1903	1903
Bridges, D. T., Lattimore; Emory Univ., 1926; Wake Forest	1926	1928
Gibbs, E. W., Shelby; Univ. of N. C., 1907	1907	1918
Gold, Ben, Shelby; Univ. of Md., 1920; U.N.C.	1920	1922
Gold, T. B., Shelby; N. C. Med. Coll., 1911	1911	1915
Hambrick, Yates; Boiling Springs; Columbia, 1915	1915	1917
Harbison, J. W., Shelby; Johns Hopkins, 1919; U.N.C.	1919	1924

Name and Address	*Licensed*	*Joined State Society*
Hill, A. L., Kings Mountain; Univ. of Pa.	1930	1932
Houser, E. A., Shelby, (Hon.); Chattanooga Med. Coll., 1898; Balt. Univ., 1902	1902	1904
Kendall, B. H., Shelby; Univ. of Md., 1929; U.N.C.	1929	1931
Lackey, W. J., Fallston; Univ. of Va., 1928; U.N.C.	1928	1929
Lattimore, E. B., Shelby, (Hon.); Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence Victor, Lattimore, (Hon.); Emory Univ., 1894	1897	1904
Matthews, B. B., Shelby; Med Coll. of S. C.	1927	1928
Moore, D. F., Shelby; Jeff. Med. Coll., 1925; Wake Forest	1925	1927
Moore, Ernest Vick; Earl; Med. Coll. of S. C., 1933	1933	1938
Oates, George, Grover, (Hon.); Univ. of Louisville, 1894	1902	1904
Padgett, Charles K., Shelby; Jeff. Med. Coll., 1930	1930	1934
Ramseur, W. L., Kings Mountain; Med. Coll. of S. C., 1926	1927	1929
Royster, S. S., Shelby, (Hon.); Tenn. Med., 1891	1896	1904
Schenk, Sam M., Shelby; Univ. of Pa., 1923; U.N.C.	1923	1926
Sherrill, H. R., Lawndale; Univ. of Tenn., 1926	1926	1927
Thompson, H. C., Shelby; Tulane Univ., 1930; U.N.C.	1931	1932

COLUMBUS COUNTY SOCIETY

President: Miller, W. Edwin, Whiteville; Emory Univ., 1929	1934	1935
Secretary: Greene, W. A., Whiteville; Northwestern Univ., 1934	1935	1936
Albright, C. J., Whiteville, Univ. of Pa., 1933	1934	1938
Cox, G. S., Tabor City; N. C. Med. Coll., 1911	1911	1914
FormyDuval, Thurston, Whiteville; Med. Coll. Va., 1919	1920	1922
Johnson, Floyd, Whiteville; Memphis Hosp. Med. Coll., 1903	1903	1904
Mickley, Jack, Tabor City; Univ. of Md., 1932	1934	1937
Sadler, R. C., Whiteville; N. C. Med. Coll., 1912	1912	1915
Whitaker, R. B., Whiteville; Univ. Coll. of Med., Va., 1912	1912	1913

CRAVEN COUNTY SOCIETY

President:		
Secretary: Kafer, Oscar A., New Bern; Univ. of Md., 1934	1934	1937
Ashford, Chas. Hall, New Bern; Johns Hopkins, 1925; U.N.C.	1927	1931
Barker, Christopher S., New Bern; Jeff. Med. Coll., 1909; U.N.C.	1909	1924
Duffy, Charles, New Bern; Jeff. Med. Coll., 1930	1930	1935
Jones, R. Duval, New Bern, (Hon.); Univ. of Md., 1896; U.N.C.	1897	1897
Patterson, Joseph F., New Bern, (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Pollock, Raymond, New Bern, (Hon.); Jeff. Med. Coll., 1897	1900	1900
Wadsworth, H. B., New Bern; Johns Hopkins, 1918	1918	1923

CUMBERLAND COUNTY SOCIETY

President: Rainey, W. T., Fayetteville; Univ. Coll. of Med., Va., 1913	1913	1916
Secretary: McFadyen, O. L., Fayetteville; N. C. Med. Coll., 1912	1912	1912
Allgood, R. A., Fayetteville; Univ. of Md. and Coll. of P. and S., 1912	1915	1917
Bullock, Thomas C., Autryville, (Hon.); P. and S., Balt., 1885	1885	1886
Cannon, E. Gaine, Hope Mills; Med. Coll. of Va., 1931	1936	1938
Currie, D. S., Parkton, (Hon.); N. C. Med. Coll., 1906	1906	1906
DeCamp, Allen Ledyard, Fayetteville; Univ. of Pa., 1934	1937	1938

Name and Address	*Licensed*	*Joined State Society*
Elfman, Samuel L., Fayetteville; Med. Coll., Va.	1936	1937
Foster, M. T., Fayetteville; Emory Univ., 1927; Wake Forest	1927	1930
Harry, J. M., Fayetteville; Med. Coll., Va., 1934	1934	1936
Highsmith, J. D., Fayetteville; Jeff. Med. Coll., 1918	1918	1920
Highsmith, J. F., Jr., Fayetteville; Univ. of Pa., 1927	1927	1929
Highsmith, J. F., Sr., Fayetteville, (Hon.); Jeff. Med. Coll., 1889	1889	1893
Highsmith, Seavy, Fayetteville, (Hon.); Univ. Coll. of Med., Va., 1901	1901	1902
Highsmith, W. C., Fayetteville; Univ. of Cincinnati, 1931; U.N.C.,	1930	1932
Lilly, James M., Fayetteville, (Hon.); Univ. Coll. of Med., Va., 1903; U.N.C.	1903	1904
McKay, W. P., Fayetteville; Tulane Univ., 1916; U.N.C.	1916	1921
Owen, D. S., Fayetteville; Univ. of Ind., 1930	1930	1933
Parker, W. T., Fayetteville; Med. Coll. S. C., 1928	1931	1933
Pittman, R. L., Fayetteville; Jeff. Med., 1910; U.N.C.	1910	1912
Pittman, W. A., Fayetteville; Temple Univ., 1932; Wake Forest	1935	1934
Robertson, J. N., Fayetteville; Med. Coll. of Va., 1923	1923	1924
Shaw, J. A., Fayetteville; Univ. of Pa., 1923; U.N.C.	1923	1926
Verdery, W. C., Fayetteville; Univ. of Ga., 1915	1920	1921

CURRITUCK—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DARE—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DAVIDSON COUNTY SOCIETY

President: Cathell, E. J., Lexington; Emory Univ., 1930	1930	1932
Secretary: Sherrill, P. M., Thomasville; Vanderbilt Univ., 1931	1935	1937
Alexander, G. T., Thomasville; Emory Univ., 1922	1933	1934
Andrew, John M., Lexington; N. Y. Univ. and Bellevue Hosp. Med. Coll., 1932; U.N.C.	1932	1934
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911	1923	1924
Craven, Erle, Jr., Lexington; Johns Hopkins, 1929	1932	1935
Craven, Jean, Lexington; Johns Hopkins, 1930	1933	1935
Farrington, R. K., Thomasville; Univ. Cinn., 1925; U.N.C.	1925	1927
Gambrell, Grover C., Lexington; Univ. of Ga., 1912	1923	1924
Hunt, W. Bryce; Lexington; Univ. of Md., 1923; Wake Forest	1923	1924
Leonard, J. C., Jr., Lexington; Jefferson, 1928	1928	1931
Mock, Frank Lowe, Lexington; N. C. Med. Coll., 1908	1908	1908
Redwine, J. Dan; Lexington; Emory Univ., 1931	1931	1934
Sharpe, C. R., Lexington; Jeff. Med. Coll., 1914; Wake Forest	1914	1917
Smith, J. A., Lexington; N. C. Med. Coll., 1915	1915	1917
Smith, William Gordon, Thomasville; Tulane Univ., 1927; U.N.C.	1927	1928
Terry, J. R., Lexington, Univ. of Louisville, 1911	1912	1913
Vestal, Willis Jasper, Lexington, (Hon.); P. and S., Balt., 1883	1889	1893

DAVIE COUNTY SOCIETY

President: Byerly, Andrew B., Cooleemee, (Hon.); Univ. Coll. of Med., Va., 1896; U.N.C.	1896	1904
Secretary:		

Name and Address	*Licensed*	*Joined State Society*
Harding, S. A., Mocksville; N. C. Med. Coll., 1910	1910	1913
Long, W. M., Mocksville; Tulane Univ., 1933	1934	1934
Plumer, D. E., Mocksville		1938

DUPLIN COUNTY SOCIETY

President:		
Secretary: Carr, Ransom Lee, Rose Hill; Balt. Med. Coll., 1907	1908	1909
Gooding, G. V., Kenansville; Tulane Univ., 1928	1928	1931
Hundley, Deane, Jr., Wallace; Boston Med. Coll., 1934	1936	1938
Robinson, J. D., Wallace; Univ. of Md., 1915	1915	1917

DURHAM-ORANGE MEDICAL SOCIETY

President: London, Arthur Hill, Durham; Univ. of Pa., 1927	1927	1930
Secretary: Jones, Thomas T., Durham; Johns Hopkins, 1932	1934	1935
Alyea, Edwin P., Durham; Johns Hopkins, 1923	1930	1930
Anderson, C. Philip, Durham; Northwestern Univ., 1935	1937	1937
Anderson, W. B., Durham; Johns Hopkins, 1924	1927	1928
Andrew, Lacey Allen, Jr., Durham; Duke, 1932; U.N.C.	1932	1936
Baker, Lenox D., Durham; Duke, 1933	1937	1937
Baker, R. D., Durham; Harvard Med. School, 1928	1934	1937
Berryhill, Walter Reece, Chapel Hill; Harvard Med. Sch., 1927; U.N.C.	1928	1934
Bitting, Numa Duncan, Durham; Jeff. Med. Coll., 1907; U.N.C.	1907	1909
Boone, W. H., Durham, (Hon.); N. C. Med. Coll., 1902	1902	1904
Boone, W. W., Durham; Jeff. Med. Coll., 1923; U.N.C.	1923	1925
Bowles, Francis N., Durham; Med. Coll. of Va., 1924	1924	1926
Bowling, Edwin Holt, Durham, (Hon.); P. and S., Balt., 1891	1890	1908
Bowling, Jackson Murrell, Durham; Med. Coll. of Va., 1931	1931	1934
Brinkley, H. M., Durham; Jeff. Med. Coll., 1919; U.N.C.	1919	1923
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897	1914	1915
Byrnes, Thomas H., Durham; Med. Coll. of S. C., 1926	1932	1932
Callaway, J. Lamar, Durham; Duke, 1932	1937	1937
Campbell, A. S., Durham; Chicago Coll., Med. and Surg., 1917	1923	1924
Carter, Bayard, Durham; Johns Hopkins, 1925	1925	1931
Cekada, Emil Bogonir, Durham; Johns Hopkins, 1929	1934	1934
Cooper, A. Derwin; Durham; Geo. Wash. Univ., 1931	1933	1934
Coppridge, W. M., Durham; Jeff. Med. Coll., 1918; U.N.C.	1919	1920
Crispell, R. S., Durham; Cornell Univ., 1920	1933	1934
Darden, O. B., Richmond, Va.; Med. Coll. of Va., 1918	1920	1920
Davison, Wilburt C., Durham; Johns Hopkins, 1917	1927	1928
Donnelly, Grant Lester, Chapel Hill; Duke, 1933; U.N.C.	1933	1935
Eagle, Watt W., Durham; Johns Hopkins, 1925	1929	1930
Fassett, Burton W., Durham; Balt. Med. Coll., 1898	1899	1908
Felts, Robert L., Durham, (Hon.); Univ. of Md., 1898	1899	1908
Ferguson, George Burton, Durham; Jeff. Med. Coll., 1932	1937	1938
Fields, Leonard E., Chapel Hill; Univ. of Pa., 1929; U.N.C.	1929	1931
Finklestein, Harold, Durham; Johns Hopkins, 1928	1937	1938
Fitzgerald, J. D., Durham; Duke, 1934	1934	1937
Fleming, Ralph Gibson, Durham; Univ. of Pa., 1936; U.N.C.	1936	1938
Forbus, Wiley D., Durham; Johns Hopkins, 1923	1930	1936
Forrest, D. E., Hillsboro; Univ. of Md., 1930	1930	1933
Gardner, Clarence E., Jr., Durham; Johns Hopkins, 1928	1932	1932

Name and Address	*Licensed*	*Joined State Society*
Goudge, Mabel E., Durham; Ohio St. Univ., 1922	1925	1927
Graham, W. A., Durham; Univ. of Pa., 1932	1932	1937
Graves, Robert W., Durham; Duke, 1933	1937	1938
Hamblen, E. C., Durham; Univ. of Va., 1928	1931	1931
Hanes, F. M., Durham; Johns Hopkins, 1908	1916	1917
Hansen-Pruss, O. C. E., Durham; Johns Hopkins, 1924	1930	1931
Hardee, W. P., Durham; Jeff. Med. Coll., 1912; U.N.C.	1912	1924
Hart, Deryl, Durham; Johns Hopkins, 1921	1929	1930
Harton, R. A., Durham; Temple Univ., 1934	1935	1936
Hayes, R. B., Hillsboro; Univ. of Md., 1906	1910	1910
Hedgepeth, E. McG., Chapel Hill, Univ. of Pa., 1931; U.N.C.	1931	1934
Hicks, Calvin S., Durham, (Hon.); Univ. of Md., 1904	1904	1904
Holloway, Joseph C., Durham; Tulane Univ., 1927; U.N.C.	1928	1929
Holloway, Robert Lee, Durham, (Hon.); Med. Coll. of Va., 1893	1893	1901
Johnson, M., Durham, (Hon.); Wash. Univ. Sch. of Med. 1877	1889	1879
Johnson, Christopher, Durham; Johns Hopkins, 1926	1930	1930
Jones, Randolph, Jr., Durham; Johns Hopkins, 1928	1933	1933
Kerns, T. C., Durham; Univ. of Pa., 1911; U.N.C.	1911	1913
Lawson, George Williams, Chapel Hill; Long Island Coll. of Med., 1935	1935	1938
MacNider, Wm. deB., Chapel Hill, (Hon.); Univ. of N. C., 1903	1903	1903
Mangum, C. S., Chapel Hill; Jeff. Med. Coll., 1894; U.N.C.	1896	1900
Manning, I. H., Chapel Hill, (Hon.); Long Island Coll., Hosp., N. Y., 1897; U.N.C.	1899	1901
Markham, Blackwell, Durham; Harvard Med. School, 1922; U.N.C.	1922	1925
McBryde, Angus M., Durham; Univ. of Pa., 1928	1931	1932
McCutcheon, W. B., Durham; Med. Coll., Va., 1921	1921	1925
McKee, Lewis Middleton, Durham; Temple Univ., 1933; U.N.C.	1934	1934
McPherson, S. D., Durham, (Hon.); Univ. of Md., 1903; U.N.C.	1903	1904
Nichols, R. E., Jr., Durham; Univ. of Pa., 1930; U.N.C.	1930	1932
Nichols, Rhodes E., Sr., Durham, (Hon.); Va. Med. Coll., 1890	1890	1904
Nicholson, W. M., Durham; Johns Hopkins, 1931	1935	1937
Orgain, Edward S., Durham; Univ. of Va., 1930	1934	1936
Perrow, James B. S., Durham; Univ. of Va., 1935	1937	1938
Perry, D. R., Durham; Jeff. Med. Coll., 1919; Wake Forest	1919	1922
Persons, Elbert Lapsley, Durham; Harvard Med. School, 1927	1931	1931
Powell, Albert H., Durham; Univ. of Georgia, 1924	1925	1926
Raney, R. Beverly, Durham; Harvard, 1930	1934	1935
Reeves, Robert J., Durham; Baylor Univ., 1924	1930	1930
Richardson, W. P., Chapel Hill; Med. Coll. of Va., 1928; Wake Forest	1928	1929
Riggsbee, A. E., Durham; Univ. of N. C., 1909	1909	1911
Roberson, Foy, Durham; Jeff. Med. Coll., 1909; U.N.C.	1909	1912
Roberts, B. W., Durham; Univ. of Md., 1924; U.N.C.	1924	1927
Roberts, Bryan N., Hillsboro; Univ. of Md., 1925; U.N.C.	1925	1926
Robertson, Edwin M., Durham; Tulane Univ., 1912; U.N.C.	1912	1929
Rosenau, M. J., Chapel Hill; Univ. of Pa., 1889	1937	1937
Ross, Geo. H., E. Durham, (Hon.); Univ. of Tenn., 1899	1899	1904
Ross, Robert A., Durham; Univ. of Pa., 1922; U.N.C.	1922	1926
Ruffin, J. M., Durham; Univ. of Va., 1926	1930	1931
Schuler, J. E., E. Durham; Med. Coll. of Va., 1914	1920	1922

Name and Address	*Licensed*	*Joined State Society*
Smith, Annie T., Durham; Univ. of Ill., 1923; U.N.C.	1925	1926
Smith, D. T., Durham; Johns Hopkins, 1922	1931	1931
Speed, Joseph A., Durham; Jeff. Med. Coll., 1914	1914	1916
Spikes, N. O., Durham; Jeff. Med. Coll., 1924; U.N.C.	1924	1927
Sprunt, Douglas H., Durham; Yale Medical School, 1927	1934	1935
Stanford, Lois Foote, Durham; Univ. of Pa., 1921	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919; U.N.C.	1919	1923
Strowd, W. A., Durham; Univ. of N. C., 1909	1909	1911
Sweaney, Hunter M., Durham; Univ. of Pa., 1919; U.N.C.	1919	1920
Thomas, Walter Lee, Durham; Univ. of Va. Med. School, 1931	1937	1938
Tyler, E. R., Durham; Jeff. Med. Coll., 1923; U.N.C.	1923	1927
Vaughan, W. W., Durham; Jefferson, 1933	1933	1938
Watkins, G. T., Jr., Durham; Jeff. Med. Coll., 1915; Wake Forest	1915	1917
Watkins, W. M., Durham; Jeff. Med. Coll., 1923	1923	1925
Wilkins, R. B., Durham; N. C. Med. Coll., 1913	1913	1915
Woodhall, Barnes, Durham; Johns Hopkins, 1930	1937	1937

EDGECOMBE-NASH COUNTIES SOCIETY

President: Battle, N. P., Rocky Mount; Univ. of Pa., 1926; U.N.C.	1930	1931
Secretary: Crumpler, James Fulton, Rocky Mount; Bellevue Hosp. Med. School, 1930	1930	1935
Anderson, R. S., Rocky Mount; Univ. of Maryland, 1924; U.N.C.	1924	1932
Battle, Margaret White, Rocky Mount; Univ. of Mich., 1933	1936	1937
Boice, E. S., Rocky Mount; Univ. of Pa., 1909	1914	1915
Brantley, Hassell, Spring Hope; Jeff Med. Coll., 1888	1888	1902
Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916	1916	1922
Bunn, J. P., Rocky Mount; Univ. of Md., 1935	1938	1935
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., Va., 1911; U.N.C.	1911	1915
Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924; U.N.C.	1924	1924
Deans, A. W., Battleboro; Med. Coll. of Va., 1915	1915	1917
Fleming, M. I., Rocky Mount; Jeff. Med. Coll., 1904; U.N.C.	1906	1919
Gorham, Herbert Jenkins, Nashville		1936
Green, Wm. W., Tarboro; Univ. of N. C., 1908	1908	1910
Jones, W. S., Nashville; ....., 1927; Wake Forest	1927	1927
Justa, Samuel H., Macclesfield; Med. Coll. of Va., 1933	1934	1934
Knowles, D. L., Rocky Mount; Univ. of Pa., 1918	1918	1920
Kornegay, Lemuel W., Rocky Mount, (Hon.); N. C. Med. Coll., 1906	1906	1906
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Martin, J. H., Red Oak; Univ. of Nashville, 1903	1904	1916
Noell, R. H., Rocky Mount; Univ. of Md., 1916	1916	1920
Parks, L. L., Tarboro; Vanderbilt Univ., 1928	1936	1936
Perry, E. M., Rocky Mount; P. and S. Balt., 1907	1907	1919
Raby, J. G., Tarboro; Univ. Coll. of Med., Va., 1911	1911	1913
Roberson, E. L., Tarboro; Univ. of Md., 1934	1937	1937
Royster, Thomas H., Tarboro; Univ. Coll. of Med., Va., 1908	1909	1914
Smith, C. T., Rocky Mount; Univ. of Pa., 1918; U.N.C.	1918	1920
Smith, John Goodrich, Rocky Mount; Duke, 1934	1937	1938
Speight, J. A., Rocky Mount; Univ. of La., 1914; U.N.C.	1915	1916

Name and Address	*Licensed*	*Joined State Society*
Stone, M. L., Rocky Mount; Univ. of Pa., 1924; U.N.C.	1928	1928
Willis, B. C., Rocky Mount; Med. Coll. of Va., 1909	1916	1917

FORSYTH COUNTY SOCIETY

President: Belton, J. F., Winston-Salem; Univ. of Pa., 1914	1914	1915
Secretary: Yoder, Paul A., Winston-Salem; Univ. of Pa., 1923; U.N.C.	1923	1925
Adams, Carlton, N., Winston-Salem; Duke, 1932	1936	1937
Ader, O. L., Walkertown; Univ. of Pa., 1925	1925	1927
Avery, E. S., Winston-Salem; Univ. of Pa., 1928	1928	1930
Beavers, J. W., Kernersville; Univ. of Pa., 1930; Wake Forest	1930	1935
Benbow, J. T., Winston-Salem; N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem; Tulane Univ., 1911; U.N.C.	1911	1914
Brooks, E. Bruce, Winston-Salem; Duke, 1933	1935	1936
Brown, F. B., Winston-Salem; Univ. of Ga., 1926	1926	1930
Butler, Leroy J., Winston-Salem; Med. Coll. of Va., 1915	1920	1921
Carlton, Romulus L., Winston-Salem, (Hon.); Univ. of Md., 1906	1906	1906
Casstevens, J. C., Clemmons; Med. Coll. Va., 1926; Wake Forest	1926	1927
Combs, Fielding, Winston-Salem; Med. Coll. Va., 1923	1931	1932
Cook, J. L., Winston-Salem; Med. Coll. Pa., 1925; U.N.C.	1925	1928
Cooke, G. C., Winston-Salem; Univ. of Md., 1919; U.N.C.	1919	1920
Couch, V. F., Winston-Salem; P. and S., New York, 1911; Wake Forest	1911	1919
Craig, S. Douglas, Winston-Salem; Tulane Univ., 1908	1900	1912
Dalton, Wm. N., Winston-Salem, (Hon.); N. C. Med. Coll., 1904	1904	1905
Davis, Thomas W., Winston-Salem, (Hon.); S. C., Med. Coll., 1898	1899	1899
DeLaney, Chas. O., Winston-Salem; Jeff. Med. Coll., 1919; U.N.C.	1919	1922
Drummond, C. S., Winston-Salem; Univ. of Ga., 1930	1933	1933
Fearington, J. C. P., Winston-Salem; Rush Med. Coll., 1930; U.N.C.	1933	1934
Garvey, Fred K., Winston-Salem; Univ. of Cincinnati, 1925; U.N.C.	1925	1932
Garvey, R. R., Winston-Salem; N. C. Med. Coll., 1915	1915	1919
Grimes, W. L., Winston-Salem; Johns Hopkins Univ., 1910	1910	1915
Hart, O. J., Winston-Salem; Med. Coll. of S. C., 1925	1930	1932
Hege, J. Roy, Winston-Salem; Univ. of Md., 1916; U.N.C.	1916	1917
Helsabeck, B. A., King; Med. Coll., Va., 1931	1931	1936
Helsabeck, R. S., King; N. C. Med. Coll., 1913	1913	1936
Henley, Ruth D., Winston-Salem; Womans Med. Coll., Pa., 1935	1937	1938
Holleman, C. E., Winston-Salem; Jeff. Med. Coll., 1932	1932	1933
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914	1914	1915
Johnson, G. F., Winston-Salem; Jefferson Med. Coll., 1934	1934	1938
Johnson, Paul W., Winston-Salem; Univ. of Louisville, 1930	1932	1933
Johnson, Wingate M., Winston-Salem; Jeff. Med. Coll., 1908	1908	1911
Jones, Beverley N., Winston-Salem; Med. Coll. of Va., 1915	1915	1921
Jones, R. Rives, Winston-Salem; Med. Coll., Va., 1923	1923	1925
Keiger, O. R., Winston-Salem; Univ. Coll. of Med., Va., 1911; U.N.C.	1911	1915

Name and Address	*Licensed*	*Joined State Society*
Kerr, J. E., Winston-Salem, (Hon.); Univ. of Md., 1897	1898	1898
Kirby, W. L., Winston-Salem; Vanderbilt, 1925	1926	1930
Lassiter, V. C., Winston-Salem; Emory Univ., 1925	1928	1929
Linville, Aaron Y., Winston-Salem, (Hon.); Univ. of N. Y., 1889	1889	1896
Long, Vann McKee, Winston-Salem, (Hon.); N. C. Med. Coll., 1906	1906	1908
Marshall, J. F., Winston-Salem; Univ. of Pa., 1931	1931	1935
May, Wm. P., Winston-Salem; George Wash. Univ., 1935	1937	1938
McCants, C. H., Winston-Salem; Med. Coll. of S. C., 1925	1929	1931
McMillan, E. A., Winston-Salem; Univ. of Pa., 1933	1933	1937
McMillan, R. L., Winston-Salem; Duke, 1933	1936	1938
Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem; Med. Coll., Va., 1911	1914	1915
Ogburn, L. C., Winston-Salem; Jeff. Med. Coll., 1928	1928	1936
Paddison, Jno. Robt., Kernersville, (Hon.); Univ. of Md., 1902; U.N.C.	1902	1904
Pepper, John Kerr, Winston-Salem, (Hon.); P. and S., Balt., 1907	1908	1908
Pfohl, Samuel F., Winston-Salem, (Hon.); Univ. of Pa., 1894	1898	1898
Pool, B. B., Winston-Salem; Jeff. Med. Coll., 1923; Wake Forest	1923	1925
Poole, C. Glenn, Winston-Salem; Tulane, 1924	1924	1927
Pulliam, B. E., Winston-Salem; Jeff. Med. Coll., 1928	1928	1931
Rankin, S. W., Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Reeves, G. F., East Bend; Med. Coll. of S. C., 1925	1925	1937
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918, U.N.C.	1920	1920
Schallert, P. O., Winston-Salem; Univ. of Ill. Med. Dept., 1904	1911	1912
Simmons, R. R., Winston-Salem; Med. Coll. of Va., 1917	1923	1924
Sink, V. Rex, Winston-Salem; Univ. of Pa., 1928; U.N.C.	1930	1935
Slate, John S., Winston-Salem, (Hon.); Univ. Coll. Med., Va., 1900	1900	1904
Spainhour, Ellis H., Winston-Salem, (Hon.); Balt. Med. Coll., 1898	1898	1898
Speas, D. C., Winston-Salem; Univ. of Md., 1911	1912	1923
Speas, W. P., Winston-Salem; Med. Coll. of Va., 1912	1911	1912
Spencer, Wm. O., Winston-Salem, (Hon.); Jeff. Med. Coll., 1891	1891	1894
Spicer, Richard W., Winston-Salem; N. C. Med. Coll., 1910; Univ. of Pa., 1911	1910	1916
Sprunt, W. H., Jr., Winston-Salem; Univ. of Pa., 1918	1918	1925
Starling, H. M., Winston-Salem; Med. Coll. of Va., 1931	1931	1937
Stone, G. E., King; Med. Coll. Va., 1915	1915	1936
Street, C. A., Winston-Salem; Harvard, 1918	1918	1925
Strickland, Edward F., Winston-Salem, (Hon.); Univ. of N. Y., 1887; U.N.C.	1887	1893
Thompson, Edg. S., Winston-Salem; Univ. of N. Y., 1919	1919	1921
Tuttle, Reuben G., Winston-Salem; N. C. Med. Coll., 1909	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins Med. School, 1910	1913	1914
Wall, R. L., Winston-Salem; Jeff. Med. Coll., 1912; Wake Forest	1912	1915
Whittington, James B., Winston-Salem; N. C. Med. Coll., 1911	1911	1913
Wright, O. E., Winston-Salem; Emory, 1924	1924	1928

Name and Address	*Licensed*	*Joined State Society*
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913; U.N.C.	1913	1916
Wylie, W. deK., Winston-Salem; Univ. of Va., 1924	1926	1928

FRANKLIN COUNTY SOCIETY

President: Fulghum, James E., Louisburg; Med. Coll. of Va., 1931; Wake Forest	1931	1934
Secretary:		
Burt, S. P., Louisburg, (Hon.); Coll. of P. and S., Balt., 1896	1896	1904
Perry, A. H., Wood; Univ. of Md., P. and S., Balt., 1924	1924	1925
Perry, H. G., Louisburg; P. and S. Balt., 1915	1915	1916
Wheless, J. B., Louisburg; Univ. of Md., 1935	1935	1938
Yarborough, R. F., Louisburg, (Hon); Geo. Wash. Univ., 1898	1899	1899

GASTON COUNTY SOCIETY

President: McConnell, H. R., Gastonia; Univ. of Md., 1924	1927	1930
Secretary: Robinson, James Lee, Gastonia; Univ. of Pa., 1932	1932	1936
Allen, M. H., Cramerton; Emory Univ., 1929	1930	1931
Anders, McT. G., Gastonia, (Hon.); Med. Coll., 1901	1902	1902
Anthony, W. A., Gastonia; Med. Coll. of Va., 1929	1929	1932
Belk, George W., Gastonia; Atlanta School of Med., 1913	1918	1924
Blair, J. L., Gastonia; Atlanta Med. Coll., 1915	1920	1921
Campbell, J. W., Gastonia; P. and S., Balt., 1893	1919	1920
Cranford, J. F., Gastonia; Univ. of N. C., 1909	1934	1935
Garber, J. Neill; Gastonia; Univ. of Indiana, 1932	1937	1938
Glenn, C. A., Gastonia; Med. Coll. of S. C., 1936	1936	1937
Glenn, H. F., Jr., Gastonia; Emory Univ., 1932	1932	1934
Glenn, Lucius N., Gastonia, (Hon.); Univ. of Md., 1897	1897	1904
Grigg, John R., Gastonia; Univ. of Louisville, 1927	1928	1937
Groves, R. B., Lowell; Med. Coll. Va., 1924	1924	1925
Herrin, H. K., Gastonia; Med. Coll. of Va., 1935	1935	1937
Houser, Forest M., Cherryville; Univ. of Pa., 1928; U.N.C.	1929	1930
Jones, W. M., Gastonia; Med. Coll. of S. C., 1922	1927	1928
Lyday, C. E., Gastonia; Atlanta School of Med., 1910	1910	1920
Matthews, W. S., Bessemer City; N. C. Med. Coll., 1910	1910	1926
McAdams, C. R., Belmont; N. C. Med. Coll., 1912	1912	1916
McChesney, W. W., Gastonia; Med. Coll. Va., 1915	1926	1927
McDowell, R. H., Belmont; Univ. of Md., 1929; U.N.C.	1930	1931
Miller, R. C., Gastonia; N. C. Med. Coll., 1909; U.N.C.	1918	1919
Mitchell, R. H., Gastonia; Med. Coll. of Va., 1936	1936	1938
Moore, B. D., Mt. Holly; Med. Coll. of Va., 1915	1915	1921
Norman, J. Standing, Gastonia; P. and S., Balt., 1909	1911	1920
Patrick, L. N., Gastonia; Univ. of Md., 1909	1910	1913
Powell, H. S., Gastonia; Univ. of Va., 1932	1932	1937
Pressly, J. M., Belmont; N. C. Med. Coll., 1915	1915	1920
Pugh, Chas. H., Gastonia; N. C. Med. Coll., 1910	1910	1913
Quickel, John C., Gastonia; Univ. of Pa., 1932; U.N.C.	1932	1936
Ramsaur, J. T., Cherryville; Univ. of Chicago, 1933	1934	1935
Reid, James W., Lowell; Jeff. Med. Coll., 1908; U.N.C.	1908	1909
Rhyne, Robert Edgar, Gastonia, (Hon.); N. C. Med. Coll., 1907	1907	1908
Roberts, W. M., Gastonia; Tufts, 1925	1928	1929
Stroupe, A. U., Jr., Mt. Holly; Med. Coll. of Va., 1931	1932	1938
Wilkins, Samuel A., Dallas, (Hon.); Univ. of Ky., 1902	1903	1903

GATES COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
Blanchard, T. W., Hobbsville; Med. Coll. of Va., 1911	1911	1919

GRAHAM COUNTY SOCIETY

GRANVILLE COUNTY SOCIETY

President: Daniel, N. C., Oxford, (Hon.); N. C. Med. Coll., 1895	1895	1903
Secretary: Thomas, Wm. N., Oxford; Med. Coll. of Va., 1911	1911	1914
Bradsher, J. S., Stovall; Univ. of Va., 1925	1925	1928
Carrington, S. M., Oxford; Rush Med. Coll., 1931; U.N.C.	1931	1934
Clay, E. L., Oxford; Univ. of Kentucky, 1929	1929	1933
Elliott, Julian C., Oxford; Univ. of Md., 1926; Wake Forest	1926	1929
Hays, B. K., Oxford, (Hon.); Univ. Coll. of Med., Va., 1894	1894	1897
Morris, Joseph A., Oxford, (Hon.); Vanderbilt Univ., 1890	1893	1899
Noblin, Roy L., Oxford; Med. Coll., Va., 1924	1924	1925
Taylor, Rives W., Oxford; Tulane Univ., 1926; U.N.C.	1926	1928
Taylor, Wm. L., Oxford, (Hon.); Univ. of Va., 1900	1901	1901
Thompson, Joseph W., Creedmoor; Ky. Univ., Louisville, 1904	1909	1917
Winston, P. H., Clarksville, Va., Med. Coll., Va., 1929	1929	1930

GREENE COUNTY SOCIETY

President: Dawson, W. E., Hookerton; Jeff. Med. Coll., 1920; Wake Forest	1920	1922
Secretary: Ellinwood, Everett H., Snow Hill; Temple Univ., 1934; U.N.C.	1935	1937
Carroll, F. W., Hookerton; Med. Coll., Va., 1925; Wake Forest	1926	1927
Harper, J. H., Snow Hill, (Hon.); Jeff. Med. Coll., 1905; U.N.C.	1906	1906
Marlowe, W. A., Walstonburg; Jeff. Med. Coll., 1919	1919	1921
Walker, Robert Jeffrey, Jr., Snow Hill; Med. Coll., Va., 1932	1934	1935
Whittington, Wm. W., Snow Hill, (Hon.); Louisville Med. Coll., 1895	1895	1902

GUILFORD COUNTY SOCIETY

President: Lyday, R. O., Greensboro; Univ. of Pa., 1920; U.N.C.	1920	1927
Secretary: Patterson, Fred M., Greensboro; Univ. of Pa., 1924; U.N.C.	1924	1928
Ashworth, W. C., Greensboro, (Hon.); P. and S., Balt., 1892	1892	1894
Aydlett, H. T., Greensboro, (Hon.); Univ. of Va., 1894	1895	1906
Banner, A. C., Greensboro; Jeff. Med. Coll., 1920	1920	1922
Banner, Chas. W., Greensboro, (Hon.); Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro, (Hon.); P. and S., Balt., 1884	1884	1890
Benton, Wayne J., Jamestown; Syracuse Univ., 1934	1934	1936
Bonner, M. D., Jamestown; Univ. of Md., 1930; U.N.C.	1930	1934
Bonner, O. B., High Point; Univ. of Md., 1917; U.N.C.	1920	1922
Brockmann, Harry L., High Point; Univ. of Pa., 1917; U.N.C.	1917	1921
Buie, R. M., Greensboro; Jeff. Med. Coll., 1914; Wake Forest	1914	1917
Burwell, John C., Jr., Greensboro; Duke Univ., 1933	1936	1937
Cardwell, D. W., Greensboro; Med. Coll., Va., 1932	1936	1937
Cole, Walter F., Greensboro; Johns Hopkins, 1909	1909	1910
Collins, Ruth M., Greensboro; Univ. of Pa., 1923	1926	1927
Cook, H. L., Greensboro; Jeff. Med. Coll., 1918; U.N.C.	1918	1920

Name and Address	*Licensed*	*Joined State Society*
Cozart, S. R., Greensboro; Med. Coll. of Va., 1923	1923	1925
Dalton, B. B., Liberty; Duke, 1932	1933	1935
Davis, P. B., High Point; Jeff. Med. Coll., 1926	1926	1929
Dees, Ralph Erastus, Greensboro; Univ. of Md., 1906	1908	1910
Dees, Rigdon O., Greensboro, (Hon.); Univ. of Md., 1906	1907	1907
Dick, Julius Vance, Gibsonville, (Hon.); Univ. of N. C., 1907	1907	1908
Dunn, R. B., Greensboro; Univ. of McGill, 1933	1936	1937
Durham, C. W., Greensboro; Geo. Wash. Univ., 1927	1927	1930
Edwards, V. E., Stokesdale; Univ. of Md., 1913	1913	1913
Flagge, Phillip W., High Point, (Hon.); Wash. Univ., St. Louis, 1902	1905	1906
Fortune, Alex F., Greensboro, (Hon.); Univ. Coll. of Med., Va., 1900; U.N.C.	1900	1904
Fox, N. A., Greensboro; Univ. of Pa., 1924; U.N.C.	1924	1926
Geddie, K. B., High Point; Jeff. Med., 1921; U.N.C.	1921	1923
Glascock, Joy H., Greensboro, (Hon.); Women's Med. Coll. of Balt., 1896	1896	1900
Gove, Ann M., Greensboro, (Hon.); Woman's Med. Coll. of N. Y. Infirmary, 1892	1896	1894
Grayson, C. S., High Point, (Hon.); Geo. Wash. Univ., 1906	1907	1908
Harney, J. N., High Point; Univ. of Pa., 1921; U.N.C.		1937
Harrison, Edmund; Greensboro, (Hon.); Univ. Coll. of Med., 1896	1900	1900
Harrison, Edward T., High Point; Johns Hopkins Med. School, 1926	1926	1928
Harvey, W. W., Greensboro, Emory Univ., 1920	1922	1923
Herring, R. A., High Point; Tulane, 1905; U.N.C.	1923	1924
Holladay, L. W., High Point; Med. Coll., Va., 1929	1936	1937
Holt, D. W., Greensboro; Jeff. Med. Coll., 1918	1918	1921
Hudson, C. C., Greensboro; Univ. Coll. Med., Va., 1910	1918	1925
Jones, Wm. M., Greensboro, (Hon.); Univ. of Md., 1903	1903	1903
Keiger, James A., Greensboro; Univ. of Va., 1916	1916	1919
Keith, Marion Y., Greensboro; Univ. of Md., 1923	1923	1927
Knight, Wm. P., Greensboro, (Hon.); Balt. Med. Coll., 1898	1898	1898
Leath, McLean B., High Point; Jefferson Med. Coll., 1933	1933	1937
Le Bauer, Maurice L., Greensboro; Univ. of Va., 1929	1930	1932
Le Bauer, S. F., Greensboro; Univ. of Va., 1929	1930	1932
Little, H. L., Gibsonville; Wash. Univ., 1934; U.N.C.	1934	1937
Lyon, B. R., Greensboro; Columbia Univ., 1915	1920	1920
Maness, A. K., Greensboro; Jeff. Med. Coll., 1928; U.N.C.	1928	1929
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912; U.N.C.	1912	1915
McAlister, Jean, Greensboro; Univ. of Pa., 1933; U.N.C.	1936	1937
McAnally, Wm. J., High Point, (Hon.); Balt. Med. Coll., 1897	1896	1899
McCain, Walkup K., High Point; Jeff. Med. Coll., 1929; U.N.C.	1929	1930
McCain, Wm. R., High Point, (Hon.); Univ. of Md., 1897; U.N.C.	1898	1898
McDonald, A. M., Greensboro; Univ. Pa., 1928; U.N.C.	1935	1937
McGee, J. M., Greensboro; Univ. of Pa., 1925; U.N.C.	1927	1928
Meadows, W. J., Greensboro, (Hon.); Med. Coll. of Alabama, 1894	1899	1904
Moseley, Charles W., Greensboro, (Hon.); Balt. Med. Coll., 1893	1893	1896
Norment, W. B., Greensboro; Jeff. Med. Coll., 1922; U.N.C.	1922	1932

Name and Address	*Licensed*	*Joined State Society*
Ownbey, Arthur D., Greensboro; Med. Coll. of Va., 1920	1925	1927
Parker, H. R., Greensboro; Univ. of Syracuse, 1923; Wake Forest	1924	1925
Pate, F. J., Greensboro; Univ. of Md.; Coll. of P. and S., Balt., 1908	1908	1915
Perry, G. G., High Point; Med. Coll., Va., 1933	1933	1934
Post, J. J., Greensboro; Columbia, 1919	1925	1926
Prefontaine, E., Greensboro; Laval Univ. of Quebec, 1927	1931	1934
Ravenel, S. F., Greensboro; Johns Hopkins, 1923	1923	1926
Register, J. F., Greensboro; S. C. Med. Coll., 1931	1936	1937
Reaves, W. P., Greensboro, (Hon.); Univ. of the South, 1903	1905	1907
Reitzel, Claude E., High Point, (Hon.); P. and S., Atlanta, 1902	1902	1902
Rhudy, Booker E., Greensboro; Med. Coll. Va., 1916	1926	1927
Rudd, J. C., Greensboro; Univ. of Tenn., 1931	1935	1935
Saunders, S. Stewart, High Point; Harvard Med. School, 1924	1926	1927
Schoonover, R. A., Greensboro; Balt. Med. Coll., 1905	1912	1912
Sharp, O. L., Greensboro; Jeff. Med. Coll., 1922	1924	1925
Sharpe, F. A., Greensboro; Univ. of Pa., 1916	1916	1920
Shelburne, P. A., Greensboro; Univ. of Va., 1927	1928	1928
Shohan, Joseph, Greensboro; Coll. P. and S., Balt., 1901	1914	1923
Sikes, C. Henry, Greensboro; Jeff. Med. Coll., 1931	1933	1934
Siske, Grady C., Pleasant Garden; Chicago Med. Coll., 1936	1937	1938
Slate, J. E., High Point; Tulane Univ., 1934	1934	1937
Slate, J. W., High Point; Univ. Coll. of Med., Va., 1900	1899	1925
Slate, M. L., High Point; Univ. of Md., 1931	1931	1934
Smith, Alick T., Greensboro; Med. Coll. of Va., 1908	1910	1913
Southard, C. G., Greensboro; N. Y. Univ., 1934	1934	1937
Stanton, D. A., High Point, (Hon.); Vanderbilt Univ., 1887	1887	1891
Strickland, H. G., Greensboro; Univ. of Md., 1930; U.N.C.	1930	1937
Sumner, Emmett A., High Point; Baylor Univ., Texas., 1925	1926	1927
Tankersley, J. W., Greensboro; Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Taylor, F. R., High Point; Univ. of Pa., 1913	1913	1915
Taylor, S. R., Greensboro; Univ. of Pa., 1921; U.N.C.	1921	1924
Thomas, J. G., Greensboro; Med. Coll. of Va., 1915	1915	1920
Thompson, C. D., High Point, (Hon.); Univ. of Tenn., 1901	1901	1904
Warwick, H. C., Greensboro; Med. Coll., Va., 1934	1934	1936
Whittington, Claude, Greensboro; Univ. of Md., 1927	1927	1929
Williams, John D., Guilford Station, (Hon.); Vanderbilt Univ., 1898	1898	1898
Williams, J. D., Jr., Stokesdale; Temple Univ. School of Med., 1930	1931	1935
Wilson, Albert R., Greensboro, (Hon.); Jeff. Med. Coll., 1882	1882	1882
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917	1917	1920
Wolff, D. R., Greensboro; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
York, Alexander Arthur, High Point, Chattanooga Med Coll., 1907	1907	1908

HALIFAX COUNTY SOCIETY

President: Joyner, P. W., Enfield; Syracuse Univ., 1932; Wake Forest	1932	1935

Name and Address	*Licensed*	*Joined State Society*
Secretary: McGeachy, R. S., Weldon, (Hon.); Bellevue Hosp., 1894	1894	1895
Beckwith, R. P., Roanoke Rapids; Univ. of Pa., 1911	1913	1916
Broun, Matthew S., Roanoke Rapids; Columbia Univ. Coll. of P. and S., 1919	1922	1923
Bunn, R. W., Enfield; Temple Univ. Med. School, 1935; Wake Forest		1937
Covington, J. M. C., Roanoke Rapids; Univ. of Va., 1929	1930	1933
Higginbotham, Upshur, Roanoke Rapids; Med. Coll. of Va., 1933		1937
Jarman, F. G., Roanoke Rapids; Univ. Coll. of Med., Va., 1911	1914	1916
Lassiter, H. G., Weldon; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Long, T. W. M., Roanoke Rapids; Univ. Coll. of Med., Va., 1908; U.N.C.	1909	1910
Maddry, M. Crocker, Roanoke Rapids; Jeff. Med. Coll., 1931	1931	1937
McDowell, W. K., Scotland Neck; Jeff. Med. Coll., 1931	1931	1934
Neville, C. H., Scotland Neck; Tulane Univ., 1927	1927	1928
Nicholson, B. M., Enfield; Univ. Coll. of Med., Va., 1910	1910	1912
Palmer, Horace; Littleton; Atlanta School of Med., 1912	1912	1920
Pollock, David, Hobgood; Med. Coll. of Va., 1935		1937
Smith, O. F., Scotland Neck, (Hon.); Univ. Coll. of Med., Va., 1899; U.N.C.	1899	1905
Stephenson, Bennett E., Roanoke Rapids; Med. Coll., Va., 1935	1935	1937
Suiter, W. G., Weldon; Med. Coll. of Va., 1917	1917	1920
Taylor, T. J., Roanoke Rapids; Jeff. Med. Coll., 1934	1934	1937
Thigpen, H. G., Scotland Neck; Jeff. Med. Coll., 1917; U.N.C.	1917	1920
Weathers, Bahnson; Roanoke Rapids; Wash. Univ., Med. School, St. Louis, 1917	1921	1922
White, Francis W. M., Halifax; Richmond Med. Coll., 1924; Wake Forest	1924	1926

HARNETT COUNTY SOCIETY

President: Wyatt, A. T., Lillington; Jeff. Med. Coll., 1919	1919	1927
Secretary: Hunter, W. B., Lillington; Univ. of Pa., 1911	1913	1920
Corbett, Clarence Lee, Dunn; Emory Univ., 1927; Wake Forest	1927	1928
Halford, Jos. W., Lillington, (Hon.); Geo. Wash. Univ., 1904	1905	1905
Highsmith, Charles, Dunn, (Hon.); Balt. Med. Coll., 1898	1898	1898
Holt, Wm. P., Erwin, (Hon.); Jeff. Med. Coll., 1895	1895	1901
Martin, J. F., Dunn; N. C. Med. Coll., 1905	1905	1918
McKay, Joseph F., Buies Creek, (Hon.); S. C. Med. Coll., 1884	1885	1900
Melvin, Wayman C., Linden, (Hon.); Univ. Coll. of Med., Va., 1900	1900	1905
O'Dell, J. W., Dunn; Med. Dept., Univ. Ga., 1926	1928	1929
Parker, Paul G., Erwin; Med. Coll. of Va., 1916	1916	1917

HAYWOOD COUNTY SOCIETY

President: Kirkpatrick, W. L., Waynesville; Vanderbilt, 1894	1894	1895
Secretary: Westmoreland, J. R., Canton; Wash. Univ., 1932; U.N.C.,	1932	1934
Abel, J. F., Waynesville, (Hon.); Univ. of Balt., 1892	1893	1899
Duckett, V. H., Canton; Univ. of Pa., 1930; Wake Forest	1930	1932

Name and Address	*Licensed*	*Joined State Society*
Johnson, W. C., Canton; Tulane Univ. of Louisana, 1912; U.N.C.	1912	1914
Lancaster, N. F., Waynesville; Med. Coll. of Va., 1931	1932	1933
McCracken, J. R., Waynesville, (Hon.); N. C. Med. Coll., 1902	1902	1903
Moore, Roy H., Canton; Wash. Univ., 1931; U.N.C.	1931	1934
Osborne, Gladys H., Waynesville; Vanderbilt, 1932	1935	1936
Owen, M. L., Canton; Univ. of Pa., 1932	1932	1936
Owen, Robert H., Canton; Univ. of Pa., 1931; Wake Forest	1931	1935
Pate, J. F., Canton; Med. Coll. of S. C., 1927	1927	1929
Reeves, J. L., Canton; Vanderbilt, 1913	1913	1917
Roberson, Robert S., Waynesville; Med. Coll. of Va., 1930	1930	1932
Russell, Jesse M., Canton; Univ. of Nashville, 1911	1911	1912
Sisk, C. N., Waynesville; Univ. of Nashville, 1905	1922	1923
Smith, D. W., Waynesville; Harvard, 1931	1935	1936
Stretcher, R. H., Waynesville; Rush Med. Coll., Chicago, 1927	1927	1930
Stringfield, Samuel L., Waynesville, (Hon.); Jeff. Med. Coll., 1905; U. N. C.	1905	1906
Stringfield, Thomas, Waynesville, (Hon.); Vanderbilt Univ., 1898; U.N.C.	1898	1899
Stringfield, Thos., Jr., Waynesville; Univ. S. C., 1934; U.N.C.	1934	1937

HENDERSON COUNTY SOCIETY

President: Brown, J. S., Jr., Hendersonville; Tulane, 1925	1926	1927
Secretary: Trotter, Fred O., Hendersonville; Univ. of Minnesota, 1933	1934	1934
Allen, Walter O., Hendersonville; Med. Coll. S. C., 1925	1926	1927
Brackett, W. E., Hendersonville; Jeff. Med. Coll., 1915	1915	1916
Brown, J. S., Sr., Hendersonville, (Hon.); Northwestern Univ., 1893	1894	1895
Dixon, Guy E., Hendersonville, (Hon.); P. and S., St. Louis, 1903	1903	1903
Fauntleroy, Jas. W., Zirconia; P. and S., Columbia, 1896	1900	1930
Fortescue, William Nicholas; Hendersonville; Duke, 1934	1934	1936
King, I. Campbell, Hendersonville; S. C. Med. Coll., 1935	1936	1937
Kirk, W. R., Hendersonville, (Hon.); Central Univ., 1891	1901	1903
McDonald, Lester B., Hendersonville; Jeff. Med., 1924	1934	1935
Salley, E. McQueen; Hendersonville, (Hon.); Univ. of Md., 1905	1905	1906
Sample, R. C., Hendersonville; Univ. of Pa., 1915	1915	1919
Staton, L. R., Harriman, Tenn.; Univ. of Md., 1929	1929	1931
Weddington, J. L., Hendersonville; Southern Med. Coll., Atlanta, 1898	1925	1926
Woodcock, J. H., Hendersonville; Hosp. Coll. of Med., Louisville; 1892	1894	1899

HERTFORD COUNTY SOCIETY

President: Walker, L. K., Ahoskie; Univ. of Md., 1911	1911	1917
Secretary: Faison, Thos. G., Winton; Med. Coll. of Va., 1932	1932	1937
Bell, O. E., Winton; Okla. Univ., 1936	1937	1938
Futrell, L. M., Murfreesboro; Va. Med. Coll., 1914; U.N.C.	1914	1918
Matheson, J. Gaddy, Ahoskie; Jeff. Med. Coll., 1929; U.N.C.	1929	1931

Name and Address	*Licensed*	*Joined State Society*
Mitchell, Paul H., Ahoskie, (Hon.); Univ. Coll. Med., Richmond, 1907	1907	1908
Ruffin, D. W., Ahoskie; Med. Coll., Va., 1932	1932	1932

HOKE COUNTY SOCIETY

President: Bethune, A. C., Raeford; N. C. Med. Coll., 1913		1928
Secretary: Murray, R. L., Raeford; Univ. of Md., 1923	1923	1925
Brown, G. W., Raeford, (Hon.); Ky. School of Med., Louisville, 1898	1900	1900
Denholm, J. S., Sanatorium; Duke, 1935	1937	1938
Godwin, G. C., Sanatorium; Med. Coll. of Va., 1915	1915	1920
Harper, F. T., Jr., Sanatorium; Med. Coll. of Va., 1934; U.N.C.	1934	1936
Matheson, R. A., Raeford; Jeff. Med. Coll., 1926; U.N.C.	1926	1928
McCain, P. P., Sanatorium; Univ. of Md., and Coll. of P. and S., Balt., 1911	1914	1917
Skeen, L. B., Sanatorium, Univ. of Md., 1935	1935	1938
Thomas, C. D., Sanatorium; Univ. of Indiana, 1926	1930	1930

HYDE COUNTY SOCIETY

IREDELL-ALEXANDER COUNTIES SOCIETY

President: Holbrook, J. Samuel, Statesville; Univ. of Pa., 1932	1932	1934
Secretary: Fleming, Frank R., Statesville; Jeff. Med. Coll., 1935	1935	1937
Bell, A. E., Mooresville, (Hon.); Univ. of Md., and Coll. of P. and S., 1897	1897	1904
Bittinger, C. L., Statesville; Univ. of Va., 1935	1936	1937
Clayton, M. B., Statesville; Univ. Louisville, 1917	1933	1935
Crouch, T. D., Stony Point; N. C. Med. Coll., 1909; Univ. of Md., 1910	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913; U.N.C.	1913	1915
Edwards, A. M., Taylorsville; Emory Univ., 1907	1907	1934
Gibson, L. O., Statesville; N. C. Med. Coll., 1913	1913	1915
Goode, T. V., Statesville; Univ. Coll. of Med., Va., 1912	1912	1916
Herman, Chas. B., Statesville; Jeff. Med. Coll., 1923; U.N.C.	1923	1925
Hinson, Angus, Statesville; Univ. Va., 1931	1935	1936
Little, Lonnie M., Statesville; Jeff. Med. Coll., 1925	1925	1927
Long, H. F., Statesville, (Hon.); Balt. Med., 1891	1892	1893
McClelland, W. D., Mooresville; Jeff. Med. Coll., 1913	1913	1917
McElwee, Ross S., Statesville; Univ. of Md., 1909	1909	1910
McLaughlin, J. E., Statesville, (Hon.); Univ. of Md., 1886	1886	1896
Myers, D. L., Harmony; Tulane, 1925; U.N.C.	1928	1929
Pressley, James L., Statesville; Jeff. Med. Coll., 1925	1925	1928
Price, H. L., Taylorsville; N. C. Med. Coll., 1914	1914	1930
Rhyne, S. A., Statesville; N. C. Med. Coll., 1915	1915	1920
Sharpe, Frank L., Statesville, (Hon.), Univ. of N. C., 1904	1904	1905
Shaw, L. R., Statesville; Med. Coll. of Va., 1930; Wake Forest	1930	1931
Sloan, A. B., Mooresville; Med. Coll. of Va., 1924	1924	1926
Tally, J. S., Troutman; Univ. of N. C., 1909	1910	1917
Tatum, Roy C., Statesville; Jeff. Med. Coll., 1919; Wake Forest	1919	1922
Taylor, G. W., Mooresville; N. C. Med. Coll., 1906	1906	1917
Thurston, Asa, Taylorsville; Univ. of Md., 1909	1909	1914

Name and Address	*Licensed*	*Joined State Society*
Trivette, W. A., Houstonville; Med. Coll. Va., 1916	1916	1925
Watts, N. C., Taylorsville; Univ. of Tenn., 1931	1934	1935
Wilson, Frank E., Mooresville; Univ. of Tenn., 1933	1933	1936

JACKSON COUNTY SOCIETY

President: Nichols, Alvin A., Sylva; Univ. of Nashville, Med. Dept., 1898	1904	1904
Secretary: Wilkes, Grover, Sylva; N. C. Med. Coll., 1916	1916	1920
Nichols, A. S., Sylva; Tenn. Med. 1906	1907	1913

JOHNSTON COUNTY SOCIETY

President: Aycock, F. M., Princeton; Med. Coll. of Va., 1921	1921	1926
Secretary: Wharton, Watson, Smithfield; Louisiana St. Univ. Med. Center, 1937	1937	1937
Booker, Edwin N., Selma; Univ. of Va., 1925	1925	1930
Brooks, H. E., Clayton; Med. Coll. of Va., 1917	1917	1923
Brown, Landis G., Smithfield; Northwestern, 1934	1935	1938
Bunn, J. H., Smithfield; Univ. of Md., 1936	1936	1938
Davidian, Vartan A., Smithfield; Univ. Kieve., Russia, 1919	1919	1930
Duncan, S. A., Benson; Tulane Univ., 1924; Wake Forest	1924	1925
Eldridge, Harvey A., Benson; Med. Coll. of Va., 1934	1934	1936
Fitzgerald, J. Herbert, Smithfield; Jeff. Med., 1920; U.N.C.	1920	1922
Grady, Jas. C., Kenly, (Hon.); Balt., Univ. School of Med., 1887	1887	1890
Hinnant, Milford, Micro; Univ. of Md., 1912; U.N.C.	1912	1913
Hocutt, Battle A., Clayton, (Hon.); Univ. of N. C., 1906	1906	1906
Jackson, M. V., Princeton; Univ. of Md., 1930	1930	1937
McLemore, Geo. A., Smithfield, (Hon.); Univ. of N. C., 1906	1906	1906
Oliver, Robert D., Selma; Univ. of Md., 1930	1930	1932
Parker, G. E., Benson, (Hon.); Coll. of P. and S., Balt., 1886	1889	1904
Person, J. B., Selma, (Hon.); Med. Coll. of Va., 1897	1897	1900
Rose, A. H., Smithfield, (Hon.); Jeff. Med. Coll., 1906	1906	1906
Sox, Carl C., Kenly; Geo. Wash. Univ., 1932	1932	1936
Stanley, John H., Four Oaks, Univ. of N. C., 1904; Johns Hopkins	1904	1906
Surles, J. B., Four Oaks; Jeff. Med. Coll., 1904	1909	1919
Upchurch, T. G., Smithfield; Duke, 1932; U.N.C.	1932	1935
Utley, H. H., Benson, (Hon.); Balt. Med. Coll., 1906	1906	1907
Vick, Geo. D., Selma, (Hon.); Jeff. Med. Coll., 1906	1906	1906
Woodward, B. L., Kenly; Univ. of Md., 1933; U.N.C.	1933	1935
Yates, R. F., Clayton; Emory, 1935	1935	1938

JONES COUNTY SOCIETY

Page, B. W., Trenton; Tulane, 1909	1909	1919

LEE COUNTY SOCIETY

President: Patterson, J. H., Broadway; Med. Coll., of Va., 1932	1932	1934
Secretary: Blue, Waylon, Jonesboro; Med. Coll. of Va., 1925	1925	1926
Byerly, J. H., Sanford; Northwestern Univ., 1934	1936	1938
Chiles, George C., Sanford; Med. Coll. of Va., 1926	1928	1928
Foster, J. F., Sanford; N. C. Med. Coll., 1916	1916	1919
James, Arthur A., Jr., Sanford; Univ. of Pa., 1932; U.N.C.	1932	1936
Knight, Floyd L., Sanford; Univ. of Va., 1924	1925	1926

Name and Address	*Licensed*	*Joined State Society*
Lutterloh, I. Hayden, Jr., Sanford; Jeff. Med. Coll., 1921; U.N.C.	1921	1922
Matthews, M. L., Sanford, (Hon.); Univ. of N. C., 1903	1903	1904
McIver, Lynn, Sanford, (Hon.); Kentucky Univ., 1901; U.N.C.	1902	1902

LENOIR COUNTY SOCIETY

President: Turrentine, Kilby P., Kinston; Rush Med. Coll., 1931; U.N.C.	1932	1933
Secretary: Page, R. O., Kinston; Syracuse Univ., Med. Col., 1928	1935	1936
Boney, Elwood R., Kinston; Univ. of Pa., 1926; U.N.C.	1926	1928
Cranz, Oscar W., Kinston; Med. Coll. of Va., 1931	1934	1936
Davis, Rachel D., Kinston; Women's Med. Coll., Pa., 1932	1933	1934
Hardy, Ira M., Kinston, (Hon.); Med. Coll., Va., 1901; U.N.C.	1902	1902
Keiter, W. Eugene, Kinston; Vanderbilt, Wash., Univ., 1932	1935	1935
Kinlaw, Wm. Bernard, Kinston; Univ. of Pa., 1920; U.N.C.	1920	1932
Lee, Mike, Kinston; Tulane Univ., 1926; Wake Forest	1926	1927
Lee, Thos. L., Kinston; Med. Coll. of Va., 1926	1926	1927
Moseley, Z. V., Kinston; Univ. Coll. of Med., Va., 1913	1913	1914
Parrott, M. C., Kinston; Tulane Univ., 1919; U.N.C.	1917	1919
Parrott, Wm. T., Kinston, (Hon.); Tulane Univ., 1899	1899	1901
Peery, Vance P., Kinston; Med. Coll. of Va., 1916	1917	1917
Register, F. M., Kinston, (Hon.); Ky. School of Med., 1893	1891	1904
Sabiston, Frank, Kinston; Univ. of Md., 1918; U.N.C.	1919	1926
Temple, R. H., Kinston; Univ. of Pa., 1936	1936	1938
Tyndall, R. G., Kinston; Univ. of Pa., 1928; Wake Forest	1928	1931
West, B. C., Kinston; Univ. of Pa., 1924; U.N.C.	1924	1926
West, C. F., Kinston; Univ. of Pa., 1917; U.N.C.	1917	1920
Whitaker, Paul F., Kinston; Med. Coll. of Va., 1922; U.N.C.	1922	1924
Wooten, Floyd P., Kinston; Jeff. Med. Coll., 1920; U.N.C.	1920	1923

LINCOLN COUNTY SOCIETY

President: Costner, Walter Vance, Lincolnton; Jeff. Med. Coll., 1924; U.N.C.	1925	1927
Secretary: Cornwell, A. M., Lincolnton; Geo. Wash. Univ., 1927	1927	1928
Bandy, W. G., Lincolnton; Vanderbilt Univ., 1908	1912	1914
Booker, J. P., Lincolnton; Med. Coll., 1936	1937	1938
Crowell, L. A., Lincolnton, (Hon.); Balt. Med. Coll., 1892	1892	1898
Crowell, L. A., Jr., Lincolnton; Tulane Med. Dept., 1930; U.N.C.	1930	1930
Edwards, Forrest D., Lawndale; Atlanta Med. Coll., 1914	1916	1919
Elliott, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916; U.N.C.	1916	1917
Gamble, J. R., Lincolnton; Univ. of Tenn., 1911	1911	1912
Hoover, C. H., Crouse, (Hon.); Chattanooga Med. Coll., 1900; Balt. Med. Coll., 1903	1903	1903
Jacobs, W. P., Delhi, India; Univ. of Pa., 1911; U.N.C.	1911	1913

MACON-CLAY COUNTIES SOCIETY

Killian, Frank M., Franklin; Univ. of Louisville, Ky., 1929	1929	1930
Rogers, W. A., Franklin, (Hon.); Univ. of Nashville, 1898	1898	1898

MADISON COUNTY SOCIETY

McElroy, J. L., Marshall; Wash. Univ., 1930	1930	1932

MARTIN-WASHINGTON-TYRRELL COUNTIES SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Pittman, E. E., Oak City; Med. Coll. of Va., 1919	1919	1920
Secretary: Fergurson, E. W., Williamston; Syracuse Coll. of Med., 1936; Wake Forest	1936	1938
Bray, T. L., Plymouth; Univ. of Md., 1916	1916	1919
Brown, Victor Emanuel, Williamston; Syracuse Coll. of Med. 1935; Wake Forest	1936	1937
Chaplin, S. C., Columbia; Jeff. Med. Coll., 1922; Wake Forest	1931	1926
Eason, J. A., Williamston; Med. Coll. of Va., 1932	1933	1934
Nelson, Robert J., Robersonville, (Hon.); Louisville Med. Coll., 1890	1890	1893
Papineau, A., Plymouth; Univ. of Pa., 1931	1933	1934
Rhodes, James S., Williamston, (Hon.); Med. Coll. of Va., 1906	1906	1907
Saunders, Jos. H., Williamston, (Hon.); Univ. Coll. of Med., Va., 1905	1905	1906
Ward, Jesse E., Robersonville, (Hon.); Univ. of Md., 1904; U.N.C.	1904	1905
Ward, Vernon Albert; Robersonville; Jeff. Med. Coll., 1908; U.N.C.	1908	1914
Winn, W. C., Williamston; Med. Coll., Va., 1935	1935	1937

McDOWELL COUNTY SOCIETY

President: Justice, Gaston B., Marion; P. and S., Atlanta, 1907; U.N.C.	1907	1908
Secretary: Butt, R. B., Marion; Emory Univ., 1920	1920	1921
Ashworth, B. L., Marion, (Hon.); P. & S., Balt., 1893	1893	1900
Johnson, John B., Old Fort; Univ. of Louisville Med. Dept., 1905	1914	1914
Jonas, John F., Marion, (Hon.); Balt. Med. Coll., 1903	1903	1903
Kirby, Guy S., Marion, (Hon.); Univ. Coll. of Med., Va., 1897	1896	1903
McIntosh, D. M., Old Fort, (Hon.); Med. Coll. of Va., 1904	1907	1908
Miller, J. F., Marion; Med. Chi., Philadelphia, 1906	1915	1919
Wood, Frank, Marion; Univ. of Pa., 1928; U.N.C.	1931	1932
Wood, Martha, Marion; Univ. of Pa., 1928; U.N.C.	1934	1935

MECKLENBURG COUNTY SOCIETY

President: Allan, William, Charlotte, (Hon.); P. and S., Balt., 1908	1906	1908
Secretary: Blair, Andrew, Charlotte; Univ. of Pa., 1924	1925	1926
Abernathy, H. N., Charlotte, (Hon.); Louisville Med. Coll., 1894	1894	1899
Adams, James R., Charlotte; Univ. of Va., 1928	1932	1933
Alexander, J. M., Charlotte; McGill Univ., 1934	1934	1937
Alexander, James R., Charlotte, (Hon.); Univ. of Md., 1894	1894	1899
Ashe, J. R., Charlotte; Columbia Univ., 1911	1915	1915
Baker, T. W., Charlotte; Univ., of Pa., 1931	1931	1938
Barret, Harvey P., Charlotte; Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte; Vanderbilt Univ., 1909	1910	1911
Baxter, Oscar Dixon, Charlotte; Jeff. Med. Coll., 1924	1934	1928
Black, George William, Charlotte; Med. Coll. of Va., 1924	1924	1925
Bost, T. C., Charlotte; Geo. Washington Univ., 1915	1920	1921
Bradford, W. B., Charlotte; Univ. of Pa., 1932	1932	1937
Bradford, W. Z., Charlotte; Univ. of Pa., 1928	1928	1930

Name and Address	*Licensed*	*Joined State Society*
Brenizer, A. G., Charlotte; Johns Hopkins, 1908 and Univ. of Heidelberg	1910	1911
Britt, C. S., Charlotte; Emory Univ., 1920	1925	1926
Bunch, Charles; Charlotte; U.N.C., 1931	1931	1935
Choate, A. B., Charlotte; Med. Coll., Va., 1929	1929	1933
Cornell, W. S., Charlotte; Emory Univ., 1931	1938	1938
Craven, Thomas W., Huntersville; Jeff. Med. Coll., 1917; U.N.C.	1917	1919
Craven, W. W., Charlotte; Univ. of Md., 1903; U.N.C.	1904	1911
Crowell, Andrew J., Charlotte, (Hon.); Univ. of Md., 1893	1892	1894
DeArmon, J. McC., Charlotte, (Hon.); Univ. of Md., 1886	1886	1887
Donnelly, Jno., Charlotte; Univ. of N. C., 1905	1905	1919
Elliott, J. A., Charlotte; Univ. of Mich., 1914	1919	1920
Faison, Elias, Charlotte; Emory Univ., 1929	1929	1933
Ferguson, R. T., Charlotte; Univ. Coll. Med., Va., 1906	1909	1922
Fleming, L. E., Charlotte; Univ. of Pa., 1931; Wake Forest	1931	1934
Franklin, Ernest W., Charlotte; Univ. of Pa., 1930; U.N.C.	1930	1932
Gage, L. G., Charlotte; Univ. of Va., 1915	1921	1922
Gallant, Robert M., Charlotte; N. C. Med. Coll., 1915	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chiru., Phila., 1913	1922	1923
Gay, Charles H., Charlotte		1938
Gibbon, James W., Charlotte; Jeff. Med. Coll., 1918	1920	1921
Gibbon, Robert L., Charlotte, (Hon.); Jeff. Med. Coll., 1887	1887	1888
Hamer, W. A., Charlotte; Univ. of Md., 1930; Wake Forest	1930	1932
Hand, Edgar H., Charlotte; N. C. Med. Coll., Charlotte, 1907	1907	1913
Hart, V. K., Charlotte; Univ. of Pa., 1921	1924	1925
Hipp, Edw. R., Charlotte; Univ. of Va., 1918	1920	1921
Houser, O. J., Charlotte; N. C. Med. Coll., 1914	1914	1916
Hovis, L. W., Charlotte, (Hon.); N. C. Med. Coll., 1904; U.N.C.	1904	1906
Hunt, Jasper S., Charlotte; Vanderbilt Univ., 1929	1932	1933
Hunter, W. Myers, Charlotte, (Hon.); Georgetown Univ., 1905	1906	1906
Johnston, J. G., Charlotte; Med. Dept., Vanderbilt Univ., 1899	1913	1916
Jones, O. H., Charlotte; Columbia Univ., 1933	1933	1937
Kelly, Luther W., Charlotte; Univ. of Va., 1924	1926	1927
Kennedy, John P., Charlotte; Jeff. Med. Coll., 1915	1915	1920
King, Parks M., Charlotte, (Hon.); Bellevue Med. Coll., 1902	1902	1904
Lafferty, Robert H., Charlotte, (Hon.); N. C. Med. Coll., 1906	1906	1906
Leinbach, Robert F., Charlotte; Univ. of Pa., 1907; U.N.C.	1907	1910
MacConnell, John W., Davidson; Univ. of Md., 1907	1908	1909
Martin, Wm. F., Charlotte; Univ. of Md., 1920	1920	1923
Martin, W. J., Greensboro; Univ. of Va., 1890	1891	1919
Massey, C. C., Charlotte; Jeff. Med. Coll., 1923	1923	1925
Matthews, Vann M., Charlotte; Univ. of Pa., 1918	1918	1921
Maulden, Paul R., Kannapolis; N. Y. Univ., 1932; U.N.C.	1932	1934
Mayer, Walter B., Charlotte; Univ. of Pa., 1930	1932	1933
McCoy, Thos. M., Charlotte, (Hon.); N. C Med. Coll., 1905	1906.	1906
McKay, Hamilton, W., Charlotte; Jeff. Med. Coll., 1910; N. C. Med. Coll., 1909	1911	1913
McKay, Robert W., Charlotte; Johns Hopkins, 1923	1928	1928
McKnight, R. B., Charlotte; Univ. of Pa., 1920; U.N.C.	1920	1928
McLaughlin, C. S., Jr., Charlotte; Univ. of Tenn., 1935	1937	1937
McLaughlin, Calvin S., Charlotte, (Hon.); Univ. of Md., 1896	1896	1903
McLesky, J. H., Charlotte; Univ. of Ga., 1909	1927	1928

Name and Address	*Licensed*	*Joined State Society*
McPhail, L. D., Charlotte, (Hon.); Univ. of Md., 1900; U.N.C.	1900	1902
Miller, Oscar L., Charlotte; Atlanta Coll. of P. and S., 1912	1921	1922
Montgomery, J. C., Charlotte; Univ. of Pa., 1932	1935	1936
Moore, Alexander W., Charlotte; Univ. of Va., 1901; Univ. and Bellevue Hosp. Med. College, 1902	1912	1913
Moore, Oren, Charlotte; N. C. Med. Coll., 1911	1911	1912
Moore, R. A., Charlotte; Univ. of Pa., 1923	1934	1925
Motley, Fred Elliott; Charlotte; Univ. of Mich., 1922	1926	1927
Munroe, H. Stokes, Charlotte, (Hon.); N. C. Med. Coll., 1902; Jeff. Med. Coll., 1903	1902	1904
Munroe, J. P., Charlotte, (Hon.); Univ. of Va., 1885	1886	1890
Myers, John Q., Charlotte, (Hon.); N. C. Med. Coll., 1904	1904	1904
Nalle, B. C., Charlotte, (Hon.); Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte; N. C. Med., Coll., 1919	1921	1922
Neblett, H. C., Charlotte; Med. Coll. of Va., 1914	1921	1929
Newell, Leon B., Charlotte, (Hon.); Univ. of N. C., 1905	1905	1906
Newton, Howard L., Charlotte; Northwestern, 1922	1923	1925
Nisbet, D. Heath, Charlotte; Harvard Med. Dept., 1917	1917	1920
Northington, J. M., Charlotte; Med. Coll. of Va., 1905	1909	1910
Nowlin, Preston, Charlotte; Univ. of Va., 1924	1929	1930
Peeler, Clarence N., Charlotte, (Hon.); N. C. Med. Coll., 1906	1906	1908
Petteway, George H., Charlotte; N. C. Med. Coll., 1913	1913	1914
Phillips, C. C., Charlotte; N. C. Med. Coll., 1912	1912	1918
Pressly, Geo. W., Charlotte, (Hon.); Jeff. Med. Coll., 1892	1895	1896
Rankin, Watson S., Charlotte, (Hon.); Univ. of Md., 1901	1901	1901
Ranson, J. Lester, Charlotte; N. C. Med. Coll., 1911	1911	1912
Ray, F. L., Charlotte; Univ. of Va., 1919; Wake Forest	1919	1922
Robinson, C. W., Charlotte; Univ. of Pa., 1930; U.N.C.	1930	1932
Ross, Otho B., Charlotte; Univ. of Pa., 1909; U.N.C.	1919	1912
Ross, T. W., Charlotte; Jeff. Med. Coll., 1927; U.N.C.	1927	1930
Sanger, P. W., Charlotte; Vanderbilt, 1931	1937	1938
Scruggs, W. Marvin, Charlotte; Univ. of Pa., 1914; Wake Forest	1914	1920
Seay, Hillis, L., Huntersville; Vanderbilt Univ., 1930	1933	1934
Selby, W. E., Charlotte; Temple Univ., 1934; U.N.C.	1934	1936
Shirley, H. C., Charlotte; Johns Hopkins, 1918	1921	1922
Shull, J. Rush, Charlotte; Univ. of Pa., 1910; U.N.C.	1910	1913
Sloan, H. L., Charlotte; Univ. of Pa., 1911	1913	1920
Smith, F. C., Charlotte; Jeff. Med. Coll., 1921; U.N.C.	1921	1925
Smith, Thos. A., Charlotte; N. C. Med. Coll., 1917	1917	1934
Sparrow, Thos. DeL., Charlotte; Univ. of Pa., 1920	1920	1923
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919; U.N.C.	1919	1921
Summerville, W. M., Charlotte; Emory Univ., 1936; U.N.C.	1936	1937
Taylor, Andrew D., Charlotte; Univ. of Md., Sch. of Med., 1934	1934	1937
Taylor, H. C., Charlotte; Tenn. Med., 1886	1910	1920
Thompson, S. Raymond, Charlotte; N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte; Univ. of Michigan, 1918	1920	1920
Townsend, M. L., Chevy Chase Sanatorium, Washington, D. C.; Indiana Med. Coll., 1906	1912	1913
Tucker, John H., Charlotte, (Hon.); Univ. of Va., 1899	1901	1904
Tydeman, F. W. L., San Francisco, California; N. C. Med. Coll., 1912	1912	1918
Wannamaker, Edward J., Jr., Charlotte; Univ. of Pa., 1921	1924	1925

Name and Address	*Licensed*	*Joined State Society*
Whisnant, Albert M., (Hon.); P. and S., Balt., 1893	1893	1899
White, Thomas Preston, Charlotte; Univ. of Pa., 1922	1924	1925
Winkler, Harry; Charlotte; Rush Med. Coll., 1929	1931	1931
Wishart, Wm. E., Charlotte; N. C. Med. Coll., 1911	1911	1913

MITCHELL COUNTY SOCIETY

Peterson, C. A., Spruce Pine, (Hon.); N. C. Med. Coll., 1907	1907	1908
Williams, L. L., Spruce Pine; Med. Coll. of S. C., 1880	1924	1927

MONTGOMERY COUNTY SOCIETY

Daligny, Charles, Troy, (Hon.); Univ. of Paris, 1878	1889	1891
Ingram, Charles B., Mt. Gilead, (Hon.); Jeff. Med. Coll., 1886	1886	1892
Thompson, Alexander Frank, Troy, (Hon.); Med. Coll. of Indiana, 1895; U.N.C.	1895	1904

MOORE COUNTY SOCIETY

President: Bowen, J. P., Aberdeen; Univ. of Md., 1929	1932	1934
Secretary: Rosser, R. G., Vass; N. C. Med. Coll., 1909	1909	1917
Blue, A. McN., Carthage; Tulane Univ., 1915	1916	1917
Chester, P. J., Southern Pines; N. C. Med. Coll., 1913	1913	1920
Davis, J. F., Hemp; Med. Coll. of Va., 1912	1912	1914
Felton, R. L., Jr., Carthage; Univ. of Pa., 1927; U.N.C.	1927	1930
Grier, Charles T., Carthage; N. C. Med. Coll., 1910	1912	1913
Marr, M. W., Pinehurst; Tufts Coll., Med. School, Boston, 1907	1909	1915
McDuffie, W. N., Hemp; Emory Univ. School of Med., 1916	1920	1921
McLeod, Alex H., Aberdeen, (Hon.); Balt. Med. Coll., 1896	1896	1904
McLeod, Vida C., Southern Pines; Baylor Univ. Coll. of Med., 1919	1931	1931
McLeod, Walter G., Southern Pines; Baylor Univ., 1921	1926	1927
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915; U.N.C.	1915	1916
Monroe, C. R., Pinehurst; Univ. of Md., 1924; U.N.C.	1925	1930
Mudgett, W. C., Southern Pines, (Hon.); Maryland Med. Coll., 1903	1908	1908
Overcash, W. E., Southern Pines; Univ. of Pa., 1926; U.N.C.	1926	1934
Owens, Francis Leroy, Pinehurst; Duke, 1934	1935	1938
Street, M. E., Glendon, (Hon.); P. and S., Balt., 1893	1893	1902
Stutz, M. Greer, Southern Pines; Med. Coll. of Va., 1934	1934	1936
Symington, John, Carthage; Univ. of Md., 1902	1927	1928
Wilcox, J. W., West End, (Hon.); U.N.C., 1906	1906	1906

NASH—SEE EDGECOMBE-NASH COUNTIES

NEW HANOVER COUNTY SOCIETY

President: Freeman, Jere D., Wilmington; Med. Coll., Va., 1918	1921	1922
Secretary: Mebane, W. C., Jr., Wilmington; Univ. of Md., 1931; U.N.C.	1932	1934
Barefoot, Graham B., Wilmington; Jeff. Med. Coll., 1923; Wake Forest	1923	1924
Bellamy, Robert H., Wilmington, (Hon.); Jeff. Med. Coll., 1902; U.N.C.	1902	1902

Name and Address	*Licensed*	*Joined State Society*
Black, Paul A. L., Wilmington; The Coll. of Medical Evangelists, 1932	1935	1938
Bond, Frederick B., Southport; Univ. of Buffalo, N. Y., 1906	1906	1938
Bulluck, Ernest S., Wilmington; Univ. of Md., 1911	1911	1912
Coddington, H. A., Wilmington; Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington, (Hon.); Univ. of N. C., 1905	1905	1906
Crouch, A. McR., Wilmington; Jeff. Med. Coll., 1916; U.N.C.	1916	1918
Elliott, A. H., Wilmington; Jeff. Med. Coll., 1919; U.N.C.	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916	1916	1921
Fales, Robert, Wilmington; Jeff. Med. Coll., 1932	1932	1936
Fay, Oliver Frederick, Wilmington; Med. Coll. of Va., 1930	1934	1935
Fergus, Leroy, Southport; Med. Coll. of Va., 1935	1937	1938
Graham, Charles, Wilmington; Harvard, 1932; U.N.C.	1932	1937
Harriss, Andrew H., Wilmington, (Hon.); Medico-Chirurgical Coll., Phila., 1893	1894	1894
Hoggard, J. T., Wilmington; Univ. Med. Coll., Richmond, 1906	1906	1922
Hooper, Joseph W., Wilmington; Univ. of Md., 1909	1912	1917
Jewett, Robert D., Wilmington, (Hon.); Univ. of Va., 1888	1890	1890
Johnson, Geo. W., Wilmington; Univ. of Pa., 1920; U.N.C.	1920	1921
Koonce, Donald, Wilmington; Univ. of Pa., 1929	1929	1934
Koonce, S. Everett, Wilmington, (Hon.); P. and S., Balt., 1896	1896	1900
Lancaster, William Jesse, Wilmington; Atlanta School of Med., 1911	1911	1935
McEachern, Duncan, Wilmington; Med. Coll., Va., 1932; U.N.C.	1932	1935
Mebane, W. C., Wilmington, (Hon.); N. C. Med. Coll., 1905; U.N.C.	1905	1916
Moore, W. Houston, Wilmington; Jeff. Med. Coll., 1910; U.N.C.	1910	1911
Murchison, D. R., Wilmington; Johns Hopkins, 1916	1922	1923
Robertson, James F., Wilmington; Univ. of Pa., 1913	1913	1916
Sidbury, J. B., Wilmington; Columbia Univ., N. Y., 1912	1915	1916
Sloan, D. B., Wilmington; Univ. of Pa., 1914; U.N.C.	1914	1920
Wessell, John C., Wilmington, (Hon.); Univ. of Md., 1900	1900	1900

NORTHAMPTON COUNTY SOCIETY

President: Fleetwood, Jos. A., Conway; Tulane, 1921	1921	1923
Secretary: Parker, Walter R., Jackson; Med. Coll. of Va., 1916	1916	1919
Cooke, Q. H., Rich Square		1934
Lister, J. L., Jackson; Med. Coll. of Va., 1896	1896	1909
Outland, R. B., Rich Square; Univ. of Pa., 1932	1933	1936
Parker, Cliton G., Woodland; Univ. Coll. of Med., Va., 1907	1907	1913
Parker, J. W., Jr., Seaboard		1934
Robertson, C. B., Jackson; Med. Coll. of Va., 1933	1934	1938
Vaughan, J. C., Rich Square; Med. Coll. of Va., 1915	1915	1916

ONSLOW COUNTY SOCIETY

Corbett, J. P., Swansboro; Wash. Univ. Sch. of Med., 1928; U.N.C.	1928	1930
Henderson, John P., Jacksonville; Va. Med. Coll., 1918	1919	1921
Kendall, John H., Richlands; Coll. of Medical Evangelists, 1934	1935	1935
Sutton, Carl W., Richlands, (Hon.); Tulane Med. Coll., 1905; U.N.C.	1905	1907

ORANGE—SEE DURHAM-ORANGE

PAMLICO COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Dees, D. A., Bayboro; Balt. Med. Coll., 1903	1903	1905
Secretary: Purdy, J. J., Oriental; Med. Coll. of Va., 1900	1914	1915
Daniels, O. C., Oriental, (Hon.); Med. Coll. of Va., 1903; U.N.C.	1903	1916
McCotter, St. Elmo., Bayboro; P. and S., Atlanta, Ga., 1908	1908	1910

PASQUOTANK-CAMDEN-CURRITUCK-DARE COUNTIES SOCIETY

Fearing, Isaiah, Elizabeth City, (Hon.); P. and S., Balt., 1896	1896	1904
Gill, Jos. A., Elizabeth City		1936
Griggs, W. T., Poplar Branch, (Hon.); Univ. of Va., 1896	1896	1901
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Sawyer, W. W., Elizabeth City, (Hon.); Univ. of Md., 1903; U.N.C.	1903	1904
Walker, H. D., Elizabeth City, (Hon.); Univ. of Md., 1902	1902	1902
White, W. H. C., Elizabeth City; Univ. of Va., 1922	1929	1930
Williams, Claude B., Elizabeth City, (Hon.); Univ. Coll. of Med., Richmond, 1903	1903	1907

PENDER COUNTY SOCIETY

Taylor, W. I., Burgaw; N. C. Med. Coll., 1902	1904	1905

PERQUIMANS—SEE CHOWAN-PERQUIMANS

PERSON COUNTY SOCIETY

President: Nichols, Austin F., Roxboro; Univ. of N. C., 1908	1908	1909
Secretary: Beam, H. M., Roxboro; Columbia Univ., 1918; Wake Forest	1918	1919
Allen, A. L., Roxboro; Med. Coll. of S. C., 1933	1934	1935
Gentry, Geo. W., Roxboro; Univ. of N. C., 1910; Wake Forest	1910	1911
Hedgpeth, E. M., Roxboro; Northwestern, 1936; Wake Forest	1937	1938
Love, Bedford E., Roxboro, (Hon.); Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale, Rt. 1, (Hon.); U.N.C., 1906	1907	1908
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President: Winstead, J. L., Greenville; Med. Sch. of Univ. of Md., 1925; U.N.C.	1925	1930
Secretary: Brooks, Fred P., Greenville; Univ. of Mich., 1933; U.N.C.	1933	1935
Armistead, D. B., Greenville; Med. Coll. of Va., 1931	1935	1936
Barrett, J. M., Greenville; Univ. of Pa., 1926; U.N.C.	1926	1928
Basnight, Thomas G., Stokes, (Hon.); Univ. of Md., 1904; U.N.C.	1905	1907
Beasley, E. Bruce, Fountain; Univ. of Pa., Sch. of Med., 1911; U.N.C.	1911	1915
Brown, W.M.B., Greenville; Med. Coll. of Va., 1929	1929	1931
Crisp, S. M., Greenville; Univ. of Pa., 1923; U.N.C.	1923	1926
Dixon, G. G., Ayden; Med. Coll. of Va., Richmond, 1915; U.N.C.	1915	1917
Ennett, N. Thomas; Greenville; Med. Coll. Va., 1907	1932	1934

Name and Address	*Licensed*	*Joined State Society*
Frizzelle, M. T., Ayden, (Hon.); Univ. Col. Med., Richmond, 1907	1907	1908
Garrenton, Connell, Bethel; Univ. of Pa., 1935; Wake Forest	1935	1937
Haar, F. B., Greenville; Jeff. Med. Coll., 1932	1932	1935
Hammond, A. F., Grifton; Jeff. Med. Coll., 1934; U.N.C.	1934	1937
Hawes, J. D., Greenville; Univ. of Va., 1932	1937	1938
Liverman, J. S., Winterville; Med. Coll. Va., 1930	1930	1934
Mewborn, J. M., Farmville; Med. Coll. of Va., 1932; U.N.C.	1932	1935
Moore, D. L., Falkland; Jeff. Med. Coll., 1936	1936	1938
Nobles, Jos. E., Greenville, (Hon.); Jeff. Med. Coll., 1899; U.N.C.	1899	1902
Pace, K. B., Greenville; Jeff. Med. Coll., 1914; U.N.C.	1914	1920
Shure, Irvin, Bethel; Med. Coll. of Va., 1933	1935	1938
Skinner, Louis Cotton, Greenville, (Hon.); Univ. of Md., 1901	1901	1903
Smith, Joseph, Greenville; Med. Coll. of Va., 1914	1916	1920
Smith, R. C., Ayden; Jeff. Med. Coll., 1923; U.N.C.	1923	1926
Taylor, Chas. W., Kings Park, N. Y.; Med. Coll., Va., 1933	1933	1935
Tucker, Earl Van, Grifton; Med. Coll. of Va., 1930; U.N.C.	1930	1935
Ward, Needham E., Greenville; Duke Univ., 1932; U.N.C.	1934	1934
Watson, Thomas M., Greenville; Tulane Univ., 1919; Wake Forest	1919	1920
Willis, W. M., Farmville; Med. Coll., of Va., 1914	1915	1924
Wooten, W. I., Greenville; Jeff. Med. Coll., 1920; U.N.C.	1920	1921

POLK COUNTY SOCIETY

President: Jervey, A. J., Tryon; Med. Coll. of S. C., 1905	1923	1926
Secretary: Preston, John Z., Tryon; Temple Univ., 1934	1935	1937
Grady, Wm. Earle, Tryon, (Hon.); Univ. of Md., and P. and S., Balt., 1894	1895	1899
Palmer, M. C., Tryon; Med. Coll. of S. C., 1910; U.N.C.	1911	1914
Smith, D. L., Saluda and Spartanburg, S. C.; S. C. Med. Coll., 1903	1926	1927

RANDOLPH COUNTY SOCIETY

President: Griffin, H. L., Asheboro; Med. Coll. of Va., 1926	1926	1928
Secretary: Soady, J. H., Asheboro; McGill Univ., 1903; Toronto Univ., 1905	1924	1926
Barnes, Dempsey, Asheboro; Med. Coll. of Va., 1925	1925	1927
Barnes, J. T., Asheboro; Med. Coll., Va., 1929	1929	1932
Barnes, Tiffany, Asheboro; Med. Coll. of Va., 1925; Wake Forest	1925	1927
Fritz, J. L., Asheboro; Temple Univ., 1936; U.N.C.	1936	1938
Hubbard, Charles C., Farmer, (Hon.); Jeff. Med. Coll., 1888	1890	1900
Johnson, J. R., Ramseur; Med. Coll. of Va., 1927; Wake Forest	1927	1929
Sumner, G. H., Asheboro; Tulane Univ., 1923	1923	1924
Sykes, R. P., Asheboro; Tulane Med. Coll., 1929	1929	1931

RICHMOND COUNTY SOCIETY

President: Milham, C. G., Hamlet; Jeff. Med. Coll., 1927; U.N.C.	1927	1930
Secretary: Everett, A. C., Rockingham, (Hon.); Univ. of Md., 1897	1897	1903
Bardin, R. M., Rockingham; Tulane Univ., 1929	1934	1935

Name and Address	*Licensed*	*Joined State Society*
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918	1920	1921
Caddell, G. C., Hoffman; N. C. Med. Coll., 1912	1912	1930
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912	1912	1914
Garrison, R. B., Hamlet; Univ. of Md., 1933; U.N.C.	1933	1935
Henry, T. Boyce, Rockingham; Columbia Univ., Coll. P. and S., N. Y., 1917; U.N.C.	1920	1921
Howell, W. L., Ellerbe; N. C. Med. Coll., 1910	1910	1912
James, W. D., Hamlet; Jeff. Med. Coll., 1908; U.N.C.	1908	1910
Kinsman, Henry F., Hamlet, (Hon.); Univ. of Vermont, 1894	1897	1904
Ledbetter, James McQ., Rockingham, (Hon.); Vanderbilt Univ., 1894; U.N.C.	1894	1903
Long, Z. F., Rockingham; Univ. of Pa., 1929; U.N.C.	1929	1930
Parsons, W. H., Ellerbe; N. C. Med. Coll., 1916	1916	1919
Terry, Wm. Calvin, Hamlet; N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914
Webb., W. P., Rockingham, (Hon.); Med. Coll. of S. C., 1897; U.N.C.,	1897	1904

ROBESON COUNTY SOCIETY

President: Benson, N. O., Lumberton; Med. Dept., Univ. Ga., 1930	1933	1934
Secretary: Hedgpeth, L. R., Lumberton; Univ. of Md., 1933; Wake Forest	1933	1934
Allen, G. C., Lumberton; Rush Med. Coll., 1932; U.N.C.	1933	1934
Baker, Horace M., Lumberton; Harvard Med. School, 1917	1919	1919
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912; U.N.C.	1912	1915
Biggs, J. I., Lumberton; Northwestern Univ., 1932	1937	1938
Bowman, E. L., Lumberton; Med. Coll., of Va., 1914	1914	1916
Britt, J. N., Lumberton; Atlanta Med., 1914	1923	1924
Brown, J. P., Fairmont, (Hon.); Univ. of Md., 1883	1889	1893
Carmichael, Thaddeus W., Rowland; Ky. Univ. Med. Dept., 1904	1911	1919
Croom, R. D., Jr., Maxton; Med. Coll. of Va., 1934		1937
Davis, G. B., Fairmont; Long Island Medical School, 1932	1936	1938
Hardin, E. R., Lumberton; Univ. of Ga., 1911	1915	1920
Hayes, A. H., Fairmont; Atlanta Med., 1917	1917	1919
Hedgpeth, W. Cary, Lumberton; Northwestern Univ., 1933; Wake Forest	1933	1936
Hodgin, H. H., Red Springs; Univ. of Md., 1905; N. C. Med. Coll., 1906	1906	1906
Holmes, A. B., Fairmont; Jeff. Med. Coll., 1910; U.N.C.	1910	1914
Johnson, C. T., Red Springs; Jeff. Med. Coll., 1920	1920	1922
Johnson, Thomas C., Lumberton, (Hon.); Med. Coll. of Va., 1903	1903	1903
Kinlaw, M. C., Pembroke; Temple Univ., 1935	1936	1938
Martin, J. A., Lumberton; Med. Coll. of Va., 1915	1915	1917
McClelland, Joseph O., Maxton; Med. Coll. of Va., 1908	1912	1913
McGrath, F. B., Lumberton; Northwestern, 1933	1937	1938
McIntyre, Stephen, Lumberton; Jeff. Med. Coll., 1928; Wake Forest	1928	1930
McMillan, R. D., Red Springs; Univ. of Md., 1910; U.N.C.	1911	1912
Meadows, J. H., Fairmont; Med. Coll. of Va., 1934	1934	1936
Nash, J. Fred, St. Pauls; N. C. Med. Coll., 1914	1914	1916

Name and Address	*Licensed*	*Joined State Society*
Poole, Claud T., St. Pauls; N. C. Med. Coll., 1909	1909	1913
Ricks, Leonard E., Fairmont, (Hon.); Med. Coll. of Va., 1896	1896	1913
Smith, John McNeill; Rowland; Jeff. Med. Coll., 1908; U.N.C.	1908	1909
Townsend, R. G., St. Pauls; Tulane, 1927	1927	1934
Walton, G. B., Chadbourne; Tulane Univ., 1930	1930	1935
Weinstein, M. H., Fairmont; Northwestern Univ., 1936	1937	1938
Weinstein, R. L., Fairmont; Jeff. Med. Coll., 1936	1936	1938

ROCKINGHAM COUNTY SOCIETY

President: Cox, Alexander M., Madison; Med. Coll. of Va., 1932	1932	1938
Secretary: Reynolds, Ernest H., Mayodan; Univ. of N. Y., 1931; Wake Forest	1935	1936
Byrd, Allen L., Reidsville; Jeff. Med. Coll., 1936	1936	1937
Carter, P. C., Madison; Univ. of Md., 1916; Wake Forest	1916	1920
Casteen, Kenan; Leaksville; Univ. of Bellevue Hosp. Med. Coll., N. Y., 1918	1919	1921
Cummings, M. P., Reidsville; Jeff. Med. Coll., 1911; U.N.C.	1911	1913
Ferneyhough, W. T., Reidsville; W. of M., 1916	1926	1927
Fetzer, Paul W., Reidsville; Univ. of Va., 1916; U.N.C.	1916	1920
Johnson, W. A., Reidsville; N. C. Med. Coll., 1907	1909	1910
Matthews, Wm. W., Leaksville; Chicago Coll. of Med. and Surg., 1913	1915	1916
McAnally, James McG., Reidsville; Univ. of Pa., 1927; U.N.C.	1927	1928
McGehee, John Wm., Reidsville, (Hon.); Univ. of Md., 1904	1904	1905
Ray, John B., Leaksville, (Hon.); Balt. Med. Coll., 1898	1898	1898
Ray, S. P., Leaksville; Univ. of Pa., U.N.C.	1929	1931
Tuttle, A. F., Spray; N. C. Med. Coll., 1901	1901	1906
Tyner, Carl V., Leaksville; Univ. and Bellevue Hosp. Med. Coll., N. Y., 1916; Wake Forest	1916	1919
Watson, Paul S., Madison; Med. Coll. of S. C., 1928	1928	1928
Wilson, Newton G., Madison; N. C. Med. Coll., 1914	1914	1915

ROWAN COUNTY SOCIETY

President: Tatum, Walter Lowe, Salisbury; Jeff. Med. Coll., 1922	1922	1924
Treasurer: Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914	1914	1914
Black, O. R., Landis; N. C. Med. Coll., 1914	1914	1918
Brown, Clarence E., Faith; N. C. Med. Coll., 1918	1920	1921
Busby, G. F., Salisbury; Johns Hopkins, 1932		1936
Clement, Edward B., Salisbury, (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Coleman, L. A., Salisbury; Med. Sch., Univ. Alabama, 1912	1927	1935
Eagle, J. C., Spencer; Jeff. Med. Coll., 1923; Wake Forest; U.N.C.	1923	1925
Fleming, Giles M., Cleveland; Emory Univ., 1919	1919	1921
Frazier, J. W., Salisbury; Jeff. Med. Coll., 1924	1924	1927
Lowery, John R., Salisbury; Univ. of Md., 1904; U.N.C.	1904	1913
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919; U.N.C.	1919	1922
McCutchan, Frank, Salisbury; Univ. of Va., 1920	1927	1928
McKenzie, B. W., Salisbury; Jeff. Med. Coll., 1916; U.N.C.	1916	1920
Monk, Henry L., Salisbury, (Hon.); Med. Coll. of Va., 1899	1899	1903

Name and Address	*Licensed*	*Joined State Society*
Newman, H. H., Salisbury; Johns Hopkins, 1913	1914	1916
Peeler, John H., Salisbury, (Hon.); Va., Univ. Coll. of Med., 1899	1899	1904
Robertson, L. H., Salisbury; Univ. of Pa., 1929; U.N.C.	1929	1931
Seay, T. W., Salisbury; Univ. of Md., 1921	1922	1924
Sigman, Frederick G., Spencer; Univ. Med. Coll., Va., 1909	1909	1910
Slate, Wesley C., Spencer (Hon.); Univ. of Tenn., 1903	1903	1904
Spencer, Frederick B., Salisbury; Univ. of N. C., 1909	1909	1911
West, Robert M., Salisbury, (Hon.); Med. Coll. of Va., 1900	1900	1904
Whicker, Max E., China Grove; Univ. of Md., 1932		1934
Woodson, Charles W., Salisbury, (Hon.); Columbia Univ., P. and S., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President: Washburn, J. M., Lake Lure; Northwestern, 1899	1934	1936
Secretary: Glenn, C. F., Rutherfordton; Univ. of Louisville, 1914	1927	1938
Biggs, Montgomery H., Rutherfordton, (Hon.); Univ. of Pa., 1897	1907	1908
Bland, Charles A., Forest City; Med. Coll. of Va., 1935	1937	1938
Bostic, W. C., Jr., Forest City; Univ. Pa., 1926; Wake Forest	1926	1927
Bostic, Wm. C., Forest City, (Hon.); Chattanooga Med. Coll., 1899; N. C. Med. Coll., 1905	1905	1905
Crawford, Robt. H., Rutherfordton; Johns Hopkins, 1914	1920	1921
Eaves, Rupert S., Rutherfordton; Med. Coll., Va., 1932	1932	1933
Elliotte, Wm., Forest City; Univ. of Ga., 1934	1934	1935
Gold, Charles F., Rutherfordton; Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen, (Hon.); Chattanooga Med. Coll., 1897	1902	1904
Head, W. T., Campobello, S. C.; Atlanta Coll., P. and S., 1911	1911	1923
Hunt, J. F., Spindale; Univ. of Tenn., 1900	1900	1912
Knight, H. W., Bostic; Balt., Med. Coll., 1903	1935	1934
Logan, F. W. H., Rutherfordton; N. C. Med. Coll., 1916	1916	1919
Lovelace, Thos. C., Henrietta; N. C. Med. Coll., 1917	1920	1920
Moss, G. O., Cliffside; Emory Univ., Ga., 1927; Wake Forest	1927	1929
Norris, Henry; Waverly Mills, S. C., (Hon.); Univ. of Pa., 1897	1907	1908
Reid, George P., Forest City, (Hon.); Univ. Coll. of Med., Va., 1895	1894	1899
Rucker, Adin Adam, Rutherfordton; Univ. of Md., 1908	1908	1910
Verner, Carl Hugh, Forest City; P. and S., Atlanta, 1912	1923	1927
Whims, H. C., Rutherfordton; Univ. of Md., 1931	1931	1933
Wiseman, P. H., Avondale; Med. Coll. of Va., 1925	1925	1926

SAMPSON COUNTY SOCIETY

President: Crumpler, Paul, Clinton, (Hon.); Univ. of Tenn., 1907	1907	1908
Secretary: Ayers, J. S., Clinton; Jeff. Med. Coll., 1932; Wake Forest	1932	1937
Brewer, J. Street; Roseboro; Jeff. Med. Coll., 1919; Wake Forest	1919	1921
Cox, S. C., Kerr; Med. Coll. of Va., 1935	1935	1937
Johnson, A. N., Garland; Univ. of Pa., 1933; U.N.C.	1933	1935
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916	1920	1923

Name and Address	*Licensed*	*Joined State Society*
Matthews, James O., Clinton, (Hon.); Univ. Coll. of Med., Va., 1897	1897	1902
Moore, K. C., Newton Grove; Univ. of Mich., 1909	1909	1910
Nelson, W. H., Clinton; Temple Univ., 1934	1934	1936
Parker, Oscar L., Clinton; Med. Coll., Va., 1918	1918	1919
Royal, D. M., Salemburg; Med. Coll. of Va., 1926; Wake Forest	1926	1928
Sessoms, E. T., Roseboro; N. C. Med. Coll., 1915	1915	1917
Sikes, Gibson L., Salemburg, (Hon.); Univ. Coll. of Med., Va., 1900	1900	1902
Sloan, Wm. H., Garland; Univ. of Md., 1916; U.N.C.	1916	1920
Small, Victor R., Clinton; Ohio State Univ., Med. Coll., 1916	1920	1921
Starling, W. P., Clinton; Med. Coll., Va., 1933	1933	1936

SCOTLAND COUNTY SOCIETY

President: Wilkes, Marcus B., Laurinburg; N. C. Med. Coll., 1912	1923	1923
Secretary: Reed, D. H., Wagram; Geo. Wash. Univ., 1901	1904	1906
Buchanan, L. T., Laurinburg; Jeff. Med. Coll., 1913; Wake Forest	1913	1917
Erwin, Evan A., Laurinburg; Med. Coll. of S. C., 1912	1912	1913
Gibson, John S., Gibson, (Hon.); Univ. of Md., 1905; U.N.C.	1905	1907
James, Albert W., Laurinburg; Jeff. Med. Coll., 1918	1918	1921
James, F. P., Laurinburg; Univ. of Pa., 1916; U.N.C.	1916	1917
John, Peter, Laurinburg, (Hon.); Univ. of Md., 1897; U.N.C.	1897	1904
Livingston, Everett Alex., Gibson;; Univ. of Md., 1912	1912	1913
Pate, James G., Gibson; Univ. of Pa., 1916; U.N.C.	1916	1918
Summerlin, Harry; Laurinburg; S. C. Med. Coll., 1933		1935

STANLY COUNTY SOCIETY

President: Outlaw, J. K., Albemarle; Syracuse Univ., 1923; Wake Forest	1926	1934
Secretary: McKenzie, Wayland N., Albemarle; Med. Coll. of Va., 1935	1935	1937
Allen, Jos. A., New London, (Hon.); Univ. Coll. of Med., Va., 1901	1901	1904
Bigler, V. L., Albemarle; Univ. Pittsburgh, 1925	1926	1927
Brunson, E. P., Albemarle; Jeff. Med. Coll., 1921	1934	1924
Dickson, M. S., Oakboro; Med. Coll. of S. C., 1927	1927	1929
Dunlap, Lucius Victor; Albemarle; Univ. of N. C., 1909	1909	1910
Flythe, W. H., Norwood; Vanderbilt, 1933; U.N.C.	1933	1937
Gaskin, J. S., Albemarle; Med. Coll. of S. C., 1925	1929	1931
Gaskin, Lewis R., Albemarle; Med. Coll. of S. C., 1921	1924	1926
Gaskin, Madge B., Albemarle; Med. Coll., S. C., 1926	1933	1934
Hathcock, Thomas A., Norwood, (Hon.); Univ. of Md., 1893; U.N.C.	1893	1904
Hill, Wm. Isaac, Albemarle, (Hon.); Univ. of Md., and Coll. of P. and S., Balt., 1897	1897	1904
Lapsley, A. F. Badin; Med. Coll. of Va., 1933	1936	1937
Laton, James F., Albemarle; N. C. Med. Coll., 1904	1904	1910
Moore, D. Bain, Badin; Univ. Coll. of Med., A., 1913	1913	1915
Shaver, W. T., Albemarle; Univ. of Md., 1918	1920	1921
Tally, B. T., Albemarle; Jeff. Med. Coll., 1921; Wake Forest	1921	1922

STOKES—SEE FORSYTH

SURRY-YADKIN COUNTIES SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Smith, R. E., Mt. Airy; Univ. of Pa., 1923; U.N.C.	1923	1926
Secretary:		
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914	1914	1916
Beal, Seth M., Elkin; Tulane, 1935	1936	1938
Bell, S. A., Cycle; Northwestern Univ., 1934	1935	1938
Bernard, Holman, Pilot Mountain; Med. Coll. of Va., 1912; U.N.C.	1914	1919
Flippin, J. M., Pilot Mt., (Hon.); Coll. P. and S., 1884	1893	1900
Flippin, Samuel T., Siloam, (Hon.); N. C. Med. Coll., 1898	1898	1898
Haywood, C. L., Jr., Elkin; Harvard, 1927	1929	1930
Hoskins, H. D., Elkin	.....	1938
Lovill, Robert Jones, Mount Airy; Univ. of Md., 1910; U.N.C.	1910	1913
Mitchell, R. C., Mt. Airy; Univ. of Pa., 1919; U.N.C.	1921	1923
Royall, M. A., Elkin, (Hon.); P. and S., Balt., 1885	1889	1904
Salmons, H. C., Elkin, (Hon.); N. C. Med. Coll., 1904	1904	1908

SWAIN COUNTY SOCIETY

Bacon, Harold Lyle, Bryson City; Northwestern Univ. Med. School, 1934	1935	1936
Johnson, Edward J., Cherokee; Univ. of Iowa, 1930	.....	1936
Leiby, G. M., Bryson City; Vanderbilt Univ. Md. School, 1931; U.N.C.	1933	1934

TRANSYLVANIA COUNTY SOCIETY

Bradley, H. J., Brevard; Univ. of Iowa, 1932	1932	1936
Osborne, Joe E., Rosman; Med. Coll. of Va., 1930	1930	1930

TYRRELL—SEE MARTIN-WASHINGTON-TYRRELL

UNION COUNTY SOCIETY

President: Bolt, C. A., Marshville; Med. Coll. of S. C., 1926	1929	1930
Secretary: Ormand, J. W., Monroe; Univ. of Cincinnati Coll. of Med., 1926; U.N.C.	1928	1926
Blair, M. P., Marshville, (Hon.); Med. Coll. of Va., 1895	1895	1895
Garren, R. H., Monroe, (Hon.); Univ. of Nashville, 1900	1901	1904
Goudelock,, Jno. J., Monroe; Med. Coll. of S. C., 1923	1924	1924
Hardin, Parker C., Monroe; Harvard Med. School, 1927	1937	1937
Love, William M., Monroe; N. C. Med. Coll., 1915	1915	1919
Neal, John W., Monroe, (Hon.); N. Y. Univ., Med. Coll., 1884	1887	1904
Neese, K. E., Monroe; Wash. Univ., 1929; U.N.C.	1929	1934
Smith, G. M., Monroe; N. C. Med. Coll., 1914	1914	1919
Williams, Edward J., Monroe; Univ. and Bellevue Hosp. Med. Coll., 1917	1920	1921

VANCE COUNTY SOCIETY

President: Newell, H. A., Henderson, (Hon.); P. and S., Balt., 1906	1906	1906

Name and Address	*Licensed*	*Joined State Society*
Secretary: Wheeler, J. H., Henderson; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Gregg, Albert D., Henderson; Med. Coll. of S. C., 1913	1927	1928
Newcombe, A. P., Jr., Henderson; Jeff. Med. Coll., 1922; U.N.C.	1922	1925
Rollins, Vance B., Henderson; Univ. of Pa., 1932; U.N.C.	1932	1936
Royster, Thomas S., Henderson; Univ. of Pa., 1916; U.N.C.	1916	1924

WAKE COUNTY SOCIETY

President: Weathers, R. R., Knightdale; Richmond Med. Coll.; Wake Forest	1926	1928
Secretary: Hill, M. D., Raleigh; Med. Coll. of Va., 1928; Wake Forest	1928	1931
Abernathy, Claude O., Raleigh, (Hon.); Univ. of N. C., 1906	1906	1906
Ashby, J. W., Raleigh; Univ. of Md., 1905	1921	1922
Barbee, G. S., Zebulon; U.N.C., 1910	1910	1912
Bolus, Michael, Raleigh; Jeff. Med. School, 1934	1934	1938
Buffaloe, J. S., Garner, (Hon.); Balt. Med. Coll., 1900	1900	1904
Bugg, C. R., Raleigh; Johns Hopkins Med. Sch., 1922	1924	1926
Bulla, A. C., Raleigh; N. C. Med. Coll., 1915	1915	1918
Burt, B. W., Holly Springs, (Hon.); P. and S., Balt., 1886	1886	1904
Campbell, Alton C., Raleigh; Univ. of N. C., 1910	1910	1912
Carpenter, Coy C., Wake Forest; Syracuse Univ., 1924; Wake Forest	1924	1927
Caviness, V. S., Raleigh; Jeff. Med. Col., 1921; U.N.C.	1921	1926
Caviness, Zebulon M., Raleigh, (Hon.); Univ. of N. C., 1903	1903	1903
Coleman, G. S., Raleigh, (Hon.); Med. Coll. of Va., 1907	1907	1908
Combs, Jos. J., Raleigh, Columbia Univ. of C. and P., 1926	1926	1929
Cooper, G. M., Raleigh, (Hon.); Univ. Coll. of Med., Va., 1905	1905	1904
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., 1914	1914	1917
Crumpler, A. G., Fuquay Springs; Temple Univ., 1936	1936	1938
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920; U.N.C.	1920	1923
Dickinson, K. L., Raleigh; Univ. of Minn., 1932	1935	1936
Easom, H. F., Raleigh; Wash. Univ., Med. School	1929	1929
Edwards, C. J., Raleigh; Med. Coll. of Va., 1917	1921	1923
Eldridge, Chas. P., Raleigh; Univ. Pa., 1926; U.N.C.	1926	1928
Finch, O. E., Raleigh; Jeff. Med. Coll., 1915; U. N. C.	1915	1917
Flowers, C. E., Zebulon; Med. Coll. of Va., 1913; U.N.C.	1915	1916
Foster, Glenn G., Raleigh; Univ. of Iowa, 1931	1936	1938
Fox, P. G., Raleigh; Med. Coll. of Va., 1922	1923	1929
Fox, Robert Eugene, Raleigh; Univ. of Pa., 1926	1926	1929
Freeman, R. H., Raleigh; Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh, (Hon.); Univ. of Md., 1905; U.N.C.	1905	1914
Glascock, H. W., Jr., Raleigh; N.Y.U., 1934; U.N.C.	1934	1936
Goodwin, O. S., Apex; Jeff. Med. Coll., 1923; U.N.C.	1923	1926
Greene, Phares Yates, Apex; Northwestern Univ., 1933; Wake Forest	1932	1934
Hall, W. D., Raleigh; Med. Coll. of S. C., 1932	1933	1934
Hamilton, John H., Raleigh; Med. School of Harvard, 1916	1926	1922
Haywood, Hubert B., Raleigh; Univ. of Pa., 1909	1909	1910
Herring, E. H., Raleigh; Univ. of Pa., 1930, Wake Forest	1930	1934
Hicks, V. M., Raleigh; Jeff. Med. Coll., 1918	1918	1922
Hightower, Felda; Raleigh; Univ. of Pa., 1933	1933	1936

Name and Address	*Licensed*	*Joined State Society*
Horton, M. C., Raleigh; Univ. Coll. of Med., Va., 1903; U.N.C.	1911	1912
Horton, Wm. C., Raleigh, (Hon.); P. and S., Balt., 1897	1896	1904
Howle, Eugene B., Raleigh; Univ. of Md., 1910	1910	1937
Hunter, J. P., Cary; Jeff. Med. Coll., 1919; Wake Forest	1919	1921
Jones, Carey C., Apex; Jeff. Med. Coll., 1920; Wake Forest	1920	1923
Judd, Eugene C., Raleigh; Univ. of Pa., 1911; U.N.C.	1911	1912
Judd, Glenn B., Varina; Duke Univ. and Vanderbilt Univ., 1932	.....	1935
Judd, James M., Varina, (Hon.); Balt. Med. Coll., 1897	1897	1901
King, E. S., Wake Forest; Jeff. Med. Coll., 1927; Wake Forest	1927	1930
Kitchin, Thurman D., Wake Forest, (Hon.); Jeff. Med. Coll., 1908; U.N.C.	1908	1908
Knox, J. C., Raleigh; Univ. of Md., 1924	1924	1932
Lamm, Isaac W., Raleigh, (Hon.); Univ. Coll. of Med., Va., 1899	1899	1900
Lane, Bessie, Raleigh; Woman's Med. Coll. of Pa., 1921	1921	1926
Lawrence, B. J., Raleigh; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Liles, L. C., Raleigh; Med. Coll. of Va., 1930; U.N.C.	1930	1933
Lowery, E. F., Raleigh; Univ. of Louisville; 1917	.....	1934
Mackie, Geo. C., Wake Forest; Univ. of Pa., 1928; Wake Forest	1928	1932
McGee, Robert L., Raleigh; Univ. of Pa., 1932	1932	1935
McKee, John S., Raleigh; Univ. of Md., 1907	1908	1910
McLeod, N. H., Raleigh; Univ. of Pa., 1930; U.N.C.	1930	1932
Miller, Lila Bonner, Raleigh	19	1936
Mitchener, J. S., Raleigh; Johns Hopkins Univ., 1915	1915	1917
Morehead, Robert P., Wake Forest; Jeff. Med. Coll., 1936	1936	1938
Neal, Kemp P., Raleigh; Harvard, 1917	1920	1921
Noble, R. P., Raleigh, (Hon.); Univ. of N. C., 1907	1907	1908
Norton, Roy, Raleigh; Vanderbilt, 1928; U.N.C.	1928	1932
Oliver, A. S., Raleigh; Jeff. Med. Coll., 1914; U.N.C.	1914	1919
Owen, J. F., Raleigh; Jefferson; Wake Forest	1920	1927
Powers, Frank P., Raleigh; Univ. of Pa., 1927; Wake Forest	1927	1928
Proctor, I. M., Raleigh; Univ. of Pa., 1915	1915	1917
Rand, E. G., Raleigh; Univ. of Pa., 1926; U.N.C.	1926	1929
Ray, O. L., Raleigh, (Hon.); Univ. Coll. of Med., Richmond; 1899	1899	1904
Reavis, Chas. W., Raleigh; Med. Coll. of Va., 1936	1936	1938
Rhodes, John S., Raleigh; Harvard, 1929; U.N.C.	1929	1936
Robinson, R. L., Raleigh; Emory Univ., 1936	1936	1938
Rogers, Jas. Rufus, (Hon.); P. and S., Balt., 1886	1886	1904
Root, Aldert S., Raleigh; Univ. of Pa., 1911	1911	1913
Royster, Hubert A., Raleigh, (Hon.); Univ. of Pa., 1894	1894	1895
Ruark, R. J., Raleigh; Univ. of Pa., 1931	1931	1934
Smith, Sidney, Raleigh; Tulane Univ., 1925; U.N.C.	1925	1930
Smith, W. G., Wendell; Med. Coll. of Va., Wake Forest	1926	1928
Stimpson, R. T., Raleigh; Univ. of Pa., 1927; U.N.C.	1927	1930
Strickland, W. M., Wendell; Med. Coll. of Va., 1919	1921	1923
Swann, Jos. F., Raleigh, (Hon.); P. and S., Balt., 1896	1896	1904
Tew, Cloyce, Raleigh; Johns Hopkins, 1931	1931	1938
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914	1914	1917
Turner, H. G., Raleigh; Univ. of Pa., 1906; U.N.C.	1907	1910
Vann, H. M., Wake Forest; Jeff. Med. Coll., 1917; Wake Forest	1920	1923
Wall, Roger I., New York City; Tulane Univ., 1934	1934	1937
Ward, W. T., Raleigh; Maryland Univ., 1925	1925	1927

Name and Address	*Licensed*	*Joined State Society*
Watson, John B., Raleigh; Univ. of N. C., 1908	1908	1909
West, Louis N., Raleigh; Jeff. Med. Coll., 1912; U.N.C.	1912	1915
Wilkerson, Charles B., Raleigh, (Hon.); Univ. of N. C., 1906	1906	1908
Wilkinson, C. T., Wake Forest; Tulane Univ., 1922; Wake Forest	1922	1924
Wilkinson, R. W., Jr., Wake Forest; Tulane Univ., 1922, Wake Forest	1923	1924
Williams, Chas. F., Raleigh; Jeff. Med. Coll., 1934	1934	1937
Wilson, Frank, Jr., Raleigh; Univ. of Md., 1932; U.N.C.	1932	1937
Wright, J. B., Raleigh, (Hon.); Univ. Coll. of Med., Va., 1899; U.N.C.	1899	1900

WARREN COUNTY SOCIETY

Foster, H. H., Norlina; Jeff. Med. Coll., 1919	1919	1923
Peete, C. H., Warrenton, (Hon.); Univ. of Pa., 1903	1906	1906

WASHINGTON—SEE MARTIN-WASHINGTON-TYRRELL

WATAUGA-ASHE COUNTIES SOCIETY

Hagaman, J. B., Boone; Univ. of Tenn, 1915	1915	1915
Hagaman, L. D., Boone; Univ. of Pa., 1936; Wake Forest	1936	1938
Harmon, R. H., Boone; Med. Coll. of Va., 1936	1936	1936
Jones, T. Lester, Lansing; Med. Coll. of Va., 1909; U.N.C.	1909	1917
King, Robt. Rogers, Boone; Med. Dept. Univ. of Ark	1931	1932
Perry, H. B., Boone; N. C. Med. Coll., 1905	1905	1922

WAYNE COUNTY SOCIETY

President: Best, D. E., Goldsboro; Univ. of Md., 1924; Wake Forest	1924	1926
Secretary: Zealy, A. H., Jr., Goldsboro; Harvard Med., 1930; U.N.C.	1932	1934
Benton, George R., Jr., Goldsboro; Univ. of Va., 1933; U.N.C.	1935	1938
Bizzell, M. E., Goldsboro; Tulane Univ., 1923; U.N.C.	1923	1925
Bizzell, T. Malcolm, Goldsboro; Univ. of Md., 1908	1908	1916
Brown, C. R., Goldsboro; S. C. Med. Coll., 1934	1934	1937
Cobb, Donnell B., Goldsboro; Univ. Pa., 1921; U.N.C.	1921	1926
Cobb, Wm. H., Goldsboro, (Hon.); Jeff. Med. Coll., 1889	1889	1890
Dale, G. C., Goldsboro; Univ. of Pa., 1925; U.N.C.	1925	1927
Harrell, L. J., Goldsboro; Univ. of Maryland, 1930; Wake Forest	1930	1934
Henderson, C. C., Mt. Olive; Univ. of Md., 1914; U.N.C.	1914	1919
Howard, C. E., Goldsboro; Univ. of Pa., 1925; U.N.C.	1925	1927
Irwin, Henderson, Eureka; Univ. of Md., 1912	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., Richmond, 1911; Wake Forest	1911	1917
Linville, W. C., Goldsboro; Univ. of Md., 1903; U.N.C.	1903	1923
Long, I. C., Goldsboro; Univ. of Md., 1923	1923	1937
McCuiston, A. M., Mt. Olive; N. C. Med. Coll., 1911	1911	1917
McPheeters, S. B., Goldsboro; Wash. Univ., 1906	1933	1934
Miller, Robert B., Goldsboro, (Hon.); Med. Coll. of Va., 1898; U.N.C.	1900	1902

Name and Address	*Licensed*	*Joined State Society*
Person, Edgar Cooper, Pikeville; Med. Coll. of Va., 1905	1905	1908
Rand, C. H., Fremont; Univ. of Pa., 1926; U.N.C.	1926	1928
Rose, David J., Goldsboro; Tulane Univ., 1922; U.N.C.	1922	1924
Smith, W. C., Goldsboro; Univ. of Md., 1936	1936	1938
Smith, Wm. H., Goldsboro; Univ. of Pa., 1906; U.N.C.	1907	1912
Stenhouse, Henry M., Goldsboro; Univ. of Colo., 1913	1937	1938
Strosnider, Charles F., Goldsboro; Univ. of Md., 1909	1910	1913
Warrick, L. A., Goldsboro; Geo. Wash. Univ., 1923; Wake Forest	1923	1924
Whepley, Frank L., Goldsboro; Mo. Univ., 1902	1918	1919
Wilkins, J. W., Mount Olive; Med. Coll. of Va., 1913; U.N.C.	1913	1917
Woodard, A. G., Goldsboro; Univ. of N. C., 1907	1907	1909

WILKES-ALLEGHANY COUNTIES SOCIETY

President: Newton, Wm. K., North Wilkesboro; Med. Coll. of Va., 1931	1932	1933
Secretary: McNeill, James H., N. Wilkesboro; Geo. Wash. Univ. Med. School, 1926	1926	1927
Eller, Albert J., Wilkesboro, (Hon.); P. and S., Balt., 1893	1895	1904
Gilreath, Frank H., N. Wilkesboro, (Hon.); Univ. of Nashville, 1898	1898	1898
Hubbard, Fred C., N. Wilkesboro; Jeff. Med. Coll., 1918; U.N.C.	1919	1921
Hutchins, E. M., N. Wilkesboro, (Hon.); N. C. Med. Coll., 1896	1896	1904
Long, L. L., Laurel Springs; Lincoln Memorial Univ., 1916	1916	1934
Miles, Walter W., Champion; Univ. of Tenn. Med., 1931	1933	1934
Mitchell, G. T., Wilkesboro; Jeff. Med. Coll., 1927; U.N.C.	1927	1928
Phillips, E. N., N. Wilkesboro; Med. Coll. of Va., 1930	1930	1935
Sink, C. S., N. Wilkesboro; N. C. Med. Coll., 1912	1912	1913
Smith, Harold Benjamin, N. Wilkesboro; Med. Coll. of S. C.	1929	1930
Thompson, C. A., Sparta; Med. Coll., Va., 1924; Wake Forest	1925	1936
Triplett, W. R., Purlear; N. C. Med. Coll., 1914	1915	1920

WILSON COUNTY SOCIETY

President: Smith, F. G., Wilson; Univ. Ga., Med. Dept., 1922	1927	1931
Secretary: Sloan, William S., Wilson; Vanderbilt Univ., 1933	1933	1935
Anderson, Wade H., Wilson, (Hon.); Univ. of Va., 1902	1904	1904
Bell, G. E., Wilson; Jeff. Med. Coll., 1921; Wake Forest	1921	1922
Best, Henry B., Wilson, (Hon.); Univ. of N. C., 1907	1907	1908
Blackshear, T. J., Wilson; Emory Univ., 1914	1923	1924
Bradshaw, T. G., Rock Ridge; Med. Coll. of Va., 1909	1924	1924
Clark, Badie T., Wilson; Univ. of Ga., 1930	1934	1935
Dickinson, Elijah T., Wilson, (Hon.); Med. Coll. of Va., 1895	1895	1900
Fike, Ralph L., Wilson; Med. Coll., S. C., 1932	1933	1934
Fitzgerald, Chas., Walstonburg; Tulane, 1936	1937	1938
Hunter, W. C., Wilson; Univ. of Pa., 1928; U.N.C.	1928	1931
McClees, E. C., Elm City; Med. Coll. of Va., 1917	1920	1920
Mitchell, Geo. W., Wilson; Univ. Coll. of Med., Richmond, 1913	1913	1920
Moore, Chas. E., Wilson, (Hon.); Bellevue Hosp. Med. Coll., 1875	1875	1875
Mullen, Malcolm P., Wilson; Emory Univ., Med. School, 1927; Wake Forest	1927	1928

Name and Address	*Licensed*	*Joined State Society*
Pittman, M. A., Wilson; Jeff. Med. Coll., 1921; Wake Forest	1924	1923
Putney, R. H., Elm City; Med. Coll. of Va., 1914	1914	1920
Saliba, Michael M., Wilson; Balt. Med. Coll., 1897	1910	1910
Simons, C. E., Wilson; 1930; U.N.C.	1930	1935
Smith, A. Jones, Black Creek; Univ. of Pa., 1921; U.N.C.	1921	1923
Strickland, Arthur T., Wilson; Wash. Univ. Med. School, 1932; U.N.C.	1932	1935
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916	1916	1917
Williams, Albert F., Wilson, (Hon.); Univ. of Md., 1901; U.N.C.	1901	1904
Woodard, C. A., Wilson; Univ. of Va., 1904	1904	1920

YADKIN—SEE SURRY-YADKIN

YANCEY COUNTY SOCIETY

President:

Secretary: White, C. H., Burnsville; Tulane Univ., 1928	1930	1935
Bennett, W. L., Burnsville	.....	1933
Cheadle, C. M., Burnsville; Reokuk Med. Coll., 1898	1919	1928
Robertson, W. Burdett, Burnsville; Balt. Med. Coll., 1898	1908	1908

INDEX

PAGE

A State-wide Program for a Maternity and Infancy Service, *Dr. G. M. Cooper* ... 115
A Tuberculosis Case-finding Program for a Rural Health Department, *Dr. William P. Richardson* ... 386
Alphabetical list of Fellows for 1938 with Post Office Addresses ... 751
Amebic Dysentery in North Carolina, *Dr. Julian M. Ruffin* ... 155
Annual Report North Carolina State Board of Health to Conjoint Session State Medical Society, *Dr. Carl V. Reynolds* ... 192
Appendicitis: A problem for Public Health Agencies as well as for Practicing Physicians, *Dr. R. B. McKnight* ... 418
Board of Medical Examiners ... 170
Board of Medical Examiners—Members from 1859-1944 ... viii-ix
Board of Medical Examiners for Nurses ... xxiv
Board of Medical Examiners of the State of North Carolina, 1938-1944 ... xxiv
Cerebral Complications of Infectious Diseases, *Dr. Jean C. McAlister* ... 345
Certain Responsibilities of the Pediatrician towards the Production of a Happy Adult, *Dr. Jasper Stewart Hunt* ... 358
Chairmen of Sections, 1938-1939 ... xxi
Clinical Essentials in Abdominal Diagnosis, *Dr. Chas. Gordon Heyd* ... 141
Concerning Intraocular Changes in the Toxæmias of Pregnancy, A Review, *Henry L. Sloan* ... 452
Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health ... 191
Councilors, 1937-1940 ... xxi
Delayed Operation in the Treatment of the Perforated Appendix, *Dr. Clarence E. Gardner, Jr.* ... 517
Delegates to American Medical Association ... xxi
Delegates to Medical Society of Virginia ... xxi
Delegates to South Carolina Medical Society ... xxii
Diphtheria Immunization and Diphtheria Immunity, *Dr. Kenneth B. Geddie* ... 334
Election of Board of Medical Examiners ... 171
Endoscopy, *Dr. Vance P. Peery* ... 149
First General Session ... 61
Functional Illness and the Medical Psychology needed by the Practitioner in its Treatment, *Dr. Edward A. Strecker* ... 101
General Sessions:
  First General Session ... 61
  Second General Session ... 134
  Third General Session ... 212
Health Education Responsibilities and Opportunities in the Local Health Department, *Dr. J. A. Morris* ... 399
History of the Medical Society of the State of North Carolina ... iii-vii
Honorary Fellows ... xiv-xviii
Honorary Members ... xix
House of Delegates—Sessions of the ... 1
  Committee to Study Advisability of substituting State Medical Journal for Transactions ... 11-12, 216
  Minutes Executive Committee ... 13
  Nominating Committee ... 13
  President's Report to House of Delegates, *Dr. Wingate M. Johnson* ... 3

PAGE

Proposed Budget—January 1, 1938-December 21, 1938 32-33
Report of Board of Medical Examiners 42
Report of Committee Advisory to Industrial Commission 29
Report of Committee on Cancer 25
Report of Committee on the Control of Syphilis 37
Report of Committee on Hospitals 25
Report of Committee on Medical Society Foundation 25
Report of Committee on Post-graduate Study 33
Report of Committee on Printing 33
Report of Committee on Public Relations 29
Report of Committee on Social Security 37
Report of Committee to Study Third and Fourth-year Medical School 38
Reports of Councilors 43
Report of Delegates to the American Medical Association 41
Report of Finance Committee 29
Report of Nominating Committee 58
Resolutions:
Cruise to Bermuda for 1939 meeting 53
Uniform Narcotic Drug Act 49
Workmen's Compensation Act 50
Secretary-Treasurer's Report 9
Importance of Continuing Plan of Medical Training, *Dr. Wm. deB. MacNider* 405
Installation of President Sidbury 215
Late Complications of the Puerperium, *Dr. Lester A. Wilson* 299
Lymphopathia Venereum: Early Diagnosis and Treatment, *Dr. Walter L. Thomas* 313
Management of the Pneumonias (Motion Picture) from the Pneumonia Service of Dr. J. G. N. Bullova, Harlem Hospital, New York City 182
McBrayer Memorial—Committee to Study 214
Medical Examinations for Life Insurance, *Dr. H. F. Starr* 246
Membership—Status by Counties ..... xii-xiii
Moore County Medical Society Medal xx
Mortality in Prostatic Surgery—Technique of Prostatic Resection by the Davis Method—Motion Pictures—Analysis of 108 cases, *Dr. Raymond Thompson* 160
Neuropsychiatric Problems Associated with Cerebral Birth Injuries, *Dr. Raymond S. Crispell* 370
North Carolina Public Health Association 649
Contraception as a Public Health Measure, *Dr. Clarence J. Gamble* 730
Coöperation of Local Physicians with Maternity and Infancy Centers through Health Departments, *Dr. W. R. Parker* 703
County Control Program for Tuberculosis in North Carolina, *Doctors J. S. Denholm, P. P. McCain* 667
Public Health Education, *Dr. M. T. Foster* 649
Some Facts Concerning Rabies and Suggestions for its Control—*Dr. William Moore* 654
Sulfanilamide—Therapeutic and Toxic Effect, *Dr. Jerome S. Harris* 694
The Epidemiology of Acute Respiratory Infections, *Dr. Wilson G. Smillie* 742
The Public Health Aspect of the Sanitation Problems Created by the Touring Public, *J. M. Jarrett* 681
The Report of the Venereal Disease Program in Forsyth County Conducted by the City and County Health Departments, the Urological

PAGE

Group of the Local Medical Profession and Other Part-time Clinicians, *Dr. J. Roy Hege* ... 710
The Serum Treatment of Pneumonia, *Dr. Hubert B. Haywood* ... 717
North Carolina State Board of Health—Members ... xxvi
Obituaries of Deceased Members ... 74
Ivan Procter Battle, M.D. ... 77, 78
Claude A. Boseman, M.D. ... 78
George A. Brown, M.D. ... 97
Don Arnold Burress, M.D. ... 97
Stephen Webb Davis, M.D. ... 86
Jamie W. Dickie, M.D. ... 85
Logan Elmore Farthing, M.D. ... 99
Walter C. Galloway, M.D. ... 74
Ronda Horton Hardin, M.D. ... 79
John Sidney Hood, M.D. ... 80
Wharton G. Leak, M.D. ... 81
J. P. Matheson, M.D. ... 82, 83
Lewis Burgin McBrayer, M.D. ... 87, 88, 89
C. L. Sherrill, M.D. ... 85, 98
Fred A. Whitaker, M.D. ... 76
Observations from a Study of the Records of One Thousand Mastoid Operations, with considerations of Meningeal Complications and Treatment, *Dr. Earle G. Breeding* ... 439
Officers—1937-1938 ... xxi
Officers—1938-1939 ... xxi
On Certain Fungus Infections of the Lungs and Their Relation to Asthma, *Dr. Earle B. Craven, Jr.* ... 415
Pathology of the Lining of the Blood Vessels, *Dr. R. B. Davis* ... 549
Pelvic Architecture and Classification with its Practical Application, *Dr. O. Hunter Jones* ... 276
Posterior Vaginal Hernia, *Dr. Donnell B. Cobb* ... 538
Presentation of a Case with Aniseikonic Lense, *Dr. Horace Strickland* ... 448
Presentation of President's Jewel ... 71
President's Address—First General Session—*Dr. Wingate M. Johnson* ... 62
Program of General Sessions ... xxv-xxxi
Program of North Carolina Public Health Association ... xxxii
Program of Section Meetings ... xxvii-xxix
Report of Committee on Award of Moore County Medical Society Medal ... 71
Report of Obituary Committee ... 72
Report of State Board of Medical Examiners ... 216
Rocky Mountain Spotted Fever, *Dr. John LaBruce Ward* ... 339
Roster of Fellows for 1938 by Counties ... 769
Second General Session ... 134
Section Meetings:
General Practice of Medicine and Surgery ... 223
Gynecology and Obstetrics ... 275
Ophthalmology and OtoLaryngology ... 429
Pediatrics ... 333
Practice of Medicine ... 475
Public Health and Education ... 386
Surgery ... 517
Some Aspects of the Diphtheria Problem, *Dr. Charles R. Bugg* ... 130
Some Important Little Things in Medicine, *Dr. Wingate M. Johnson* ... 223
State Board of Health—Members from Organization to 1938 ... x-xi

PAGE
Streptococcus Laryngitis, *Dr. George F. Ferguson* 458
Sulfanilamide—Pharmacology and Therapeutics, *Dr. G. L. Donnelly* 501
Surgical Treatment of the Turbinate Bones, *Dr. C. W. Bailey* 431
Symptoms and Diagnosis of Lobar Pneumonia, *Dr. E. B. Lattimore* 230
The Care of Elderly Patients, *Dr. John Q. Myers* 238
The Function and Field of the Family Doctor, *Dr. Walter J. Lackey* 135
The General Practitioner, *Dr. J. W. McGehee* 254
The Incidence of Proliferative Ovarian Cysts, *Doctors Robert A. Ross* and *Richard L. Pearse* 121
The Indications for Specific Treatment of Pneumonia in a North Carolina Hospital, *Dr. Elbert L. Persons* 483
The Management of Syphilis in Country Practice, *Dr. John H. Mickley* 263
The Neurological Aspects of Serum Sickness, *Dr. F. R. Taylor* 509
The Physiologic Implications of Gastric Surgery, *Dr. R. B. McKnight* 555
The Rhinolaryngologist Role in Treatment of Bronchial Asthma, *Dr. N. R. Gibson* 465
The Treatment of Fractures of the Spine in the Small Hospital. With a Report of Twenty-five Cases. *Doctors C. L. Haywood* and *Charles C. Roper* 584
The Treatment of Pelvic Infection, *Dr. Thomas Leslie Lee* 327
The Tube Pedicle Skin Graft—Its Usefulness to the General Surgeon, *Dr. Thos. D. Sparrow* 562
The Value of the Galactose Tolerance Test in Differential Diagnosis of Jaundice, *Dr. Walter R. Johnson* 493
Third General Session 212
Treatment of the Heart in Lobar Pneumonia, *Dr. Allyn B. Choate* 489
Ultimate Results in 218 Patients with Sterility, *Dr. R. T. Ferguson* 320
Vaginal Hysterectomy, *Dr. J. C. Burwell, Jr.* 304
Woman's Auxiliary to the Medical Society of the State of North Carolina:
By-Laws 635-639
Convention Minutes 639-640
Greetings, *Mrs. W. E. Overcash* 619
Greetings to the Auxiliary of the Medical Society of the State of North Carolina, *Dr. Wingate M. Johnson* 628
Historian's Report 632
McCain Endowment Fund 623
Memorial Service, *Mrs. Isaac A. Manning* 620
Minutes of the Executive Board 615, 617
Officers and Committees 614-615
Officers, Program, etc. xix-xxxi
President's Report 629
Program State Convention 618-619
Report of Chairman of Health Education 632
Report of Councilors 624-627
Report of Courtesy Committee 633
Report of *Hygeia* Chairman 624
Report of Nominating Committee 633
Report of President-elect 634
Report of Program Committee 634
Response, *Mrs. K. B. Pace* 620
Roster of Members 641
Student Loan Fund 624
Treasurer's Report 621